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ABSTRACT

This booklet is intended for use by educators interested in developing environmental vocabulary and stimulating environmental awareness in adults and adolescents who use English as a foreign language. Activity participants are engaged in discussion and analysis, games, field trips, story reading, and projects. Activities are separated into 12 units that correspond to the following topics: (1) land use planning; (2) air pollution; (3) nuclear energy and the media; (4) recycling; (5) river monitoring; (6) environmental health; (7) environmental comparative risk assessment; (8) eco-tourism; (9) social action; (10) birds; (11) environmental ethics; and (12) miscellaneous activities some of which meet the needs of leaders presenting environmental issues to groups in 4 to 5 day workshops. Sections contain 1 to 15 activities with varying time requirements. Activity instructions include several paragraphs of procedural information and may include worksheets. (LZ)

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ENVIRONMENTAL ACTIVITIES

For People Who Use English as a Foreign Language

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ENVIRONMENTAL ACTIVITIES

For People Who Use English as a Foreign Language

by
Ruth Perlow, PCV
Brno, Czech Republic

Peace Corps
INFORMATION COLLECTION & EXCHANGE
August 1994

R0092

TABLE OF CONTENTS:

INTRODUCTION AND BACKGROUND..... 1
LAND USE PLANNING UNIT..... 4
AIR POLLUTION UNIT..... 16
NUCLEAR ENERGY AND THE MEDIA UNIT..... 26
RECYCLING UNIT..... 38
RIVER MONITORING UNIT..... 44
ENVIRONMENTAL HEALTH UNIT..... 57
ENVIRONMENTAL COMPARATIVE RISK ASSESSMENT UNIT... 69
ECO-TOURISM UNIT..... 77
SOCIAL ACTION UNIT..... 80
BIRD UNIT..... 84
ENVIRONMENTAL ETHICS UNIT..... 92
MISCELLANEOUS UNIT..... 102

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INTRODUCTION

This environmental activity booklet was developed in response to requests from Czech and Slovak people who want to learn more about the environment and increase their environmental English vocabulary. The participants have been adults and adolescents already involved in the environmental field and have a "working" knowledge of English. Many of these environmentalists work full-time for governmental institutes, national parks, protected landscape areas, environmental centers and youth organizations. Others are teachers and students at the university and high school level who are interested in the environment.

The purpose of this booklet is to offer its use to those interested in stimulating environmental awareness in people who are interested in the environment and use English as a foreign language. It contains a variety of practical activities designed to foster discussion and the exchange of ideas about environmental problems. These activities are also planned to improve the environmental English vocabulary of the participants so that they can access environmental information and network with other countries, especially the West.

All of the activities in this booklet have been field tested. They are separated into units and can be used in any sequence. These activities have been used in two hour to one week, six hour-a-day sessions, in a variety of settings. They can also be used in countries other than the Czech and Slovak Republics.

Ruth Perlow, author of these activities, is presently serving in the U.S.A. Peace Corps as a volunteer in the Czech Republic (formerly Czechoslovakia). Ruth is receiving her Master's Degree in Resource Management Administration and has been in the environmental field for eight years. She has worked most closely with NGOs (non-governmental organizations), national parks and protected landscape areas, environmental government scientists, youth groups and environmental education centers. Ruth has worked closely with her husband, Ken, who has been a teacher for 27 years. He is presently in the Peace Corps with Ruth.

SHORT BACKGROUND OF THE FORMER CZECHOSLOVAKIA

The former Czechoslovakia is located in Central Europe covering an area of 127.9 thousand square kilometers. The countryside is generally rolling hills with several mountain ranges, the largest is in Slovakia. Thirty four per cent of the country is forest and 55% is agricultural. The climate is temperate.

The population of 15 million people are concentrated mostly in towns (in 1987 about 68%). It is fairly homogenous, 94% Czech and 87% Slovaks in the Czech and Slovak Republics respectively. The literacy rate is about 90 percent.

BRIEF HISTORY OF FORMER CZECHOSLOVAKIA

The former Czechoslovakia was established as a country in 1918 and in 1948, it came under the control of the Communist Party. In 1989, a non-violent revolution occurred which brought democratization with it. The environmental movement played a major role in this development by publicizing the appalling environmental conditions in Czechoslovakia brought about by the Communist policies.

During the Communist era, there was political misuse of power. The totalitarian system exploited the country's natural resources with no regard to the environment. It nationalized and centralized industry using poor technology with its accompanying pollution. It established badly managed, nationalized,collective farms which used inefficient, harmful farming practices. The air, land and water became increasingly polluted. Pricing of energy, raw materials and other goods was artificially low, so there was no incentive for conservation. Information about the real conditions of the environment were kept secret from the people and public participation was not allowed in the decison-making processes. Knowledge about the West was censored and most citizens were not allowed to travel to any of these countries.

Since the break-up of the former Communist countries in Central and Eastern Europe, citizens are trying to deal with too many changes, coming too fast. Their economies are in danger and some of their basic social structures are in chaos. As with every new situation, in order to understand and deal with change, there needs to be dissemination of information, includingenvironmental, for both the professionals and, most importantly, the public.

It is urgent to raise the consciousness of the people about their environment, to give them back their lost sense of responsibility, to allow for feedback in the system and to take positive actions. It is important for the people who are struggling with economic concerns to place the enviroment in its rightful important position. There must be an open dialogue between all levels of the society in order to identify their environmental problems, share gathered information, prioritize and then take a concrete step forward.

It is hoped that the use of some of the following activities will increase environmental awareness and English vocabulary so that the latest international, environmental information can be accessed and adapted in order to find some solutions tailored for local problems.

While the author was serving her Peace Corp time in the former Czechoslovakia, it divided into two separate countries called the Czech and Slovak Republics. Since the author worked in the Czech Republic some of the information will focus on this country.

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LAND USE PLANNING UNIT

All communities deal with land planning issues. However, the Central and Eastern European countries are particularly affected because until recently the State owned most of the land. Many of these countries are now dealing with privatization. Some of the land is being returned to its former owners (before Communism). These people are often now elderly or no longer have an interest in the land. In the past families often had their own small farms with a few animals. These farms became part of large state collectives. The "farmers" of these cooperatives often knew little or nothing about farming practises and did not care to learn because for these workers, farming was only a job. This has left most of these countries without people who care about the land or feel a responsibility to learn.

Land use planning involves every aspect of our lives whether we live in a town or in the country, or for that matter anyplace on the globe. We need to think creatively about where to place industry, commerce, homes, open land for recreation, agriculture, transportation systems (road, airports and railroad lines), institutions (like schools and libraries), services (like water treatment plants) and where to leave natural areas. It is a very complex task to locate all that is necessary for humans and yet to respect the integrity of the land, for instance: are we contaminating our water supplies; cutting down our forests; destroying our wetlands; polluting our lands with chemicals and waste; putting roads over our most fertile farmlands; bulldozing the rolling hills into flatness; excavating our minerals and/or destroying the environment?

Every human has impacted the land's natural resources and in turn the land's resources has effected every human activity. We are One, bound inseparararably from the earth upon which we exist. We are totally dependent on the limited natural resources of our world and so we must carefully think about and learn to plan on how to sustain future life on our planet. What kind of legacy did the past generations leave us and what kind of conditions do we want to leave the future generations?

ACTIVITY 1:

Rationale - To raise environmental awareness about land use.

Introduce the topic of land use and if appropriate mention some of the above ideas. Have the students read aloud the article (SEE END OF UNIT) about the state of affairs in the former Czechoslovakia regarding the loss of five million tons of topsoil every year. In other countries similar information is available from the government, officials, newspapers and other sources about their own particular agricultural problem. Read and discuss the ideas.

ACTIVITY 2:

Rationale - To understand how topsoil is created.

AT THE BACK OF THE UNIT is a story about the creation of topsoil. Have the group read out loud and discuss the ideas. At the end of the story explain (as thought by a number of traditional peoples) that rocks are actually alive. Further, explain that when rocks actually become soil, their minerals are absorbed by our crops

and enable them to grow. We, in turn, eat the crops and absorb their minerals. They become part of our body. Therefore the rocks become part of us and that is how they are alive. All of nature is somehow connected and we call this interrelationship "ecology."

ACTIVITY 3:

Rationale - To examine agricultural practices.

Have the group read the article about agricultural practices and answer the questions (SEE END OF UNIT). Discuss farming practices in their country. You do not need to know much about this area as the group members will have some knowledge about the subject (SEE SUGGESTIONS BELOW).

SUGGESTIONS:

1. Rotate crops yearly because different plants utilize different nutrients from the soil.
2. Plant a "cover" crop. This means that the soil should not be bare during the winter after the harvest. Bare soil erodes from water and wind. Also farmers should choose a cover crop that will put nutrition back into the soil like legumes.
3. Trees or bushes should be planted between fields as a wind barrier to stop wind erosion.
4. On hills, ploughing should be done horizontally, not vertically, in order to stop water erosion.
5. Rows of plants should be made in curving lines (as the article mentions), especially in flat areas, as a protection against wind and water erosion.
6. Organic fertilizers (manures, old plants and compost) should be used instead of inorganic, chemical fertilizers that do not add nutrition or body to the soil like the others do.
7. Pesticides should be used very sparingly and specific ones for specific pest problems. If possible use natural methods like planting crops close to each other that help one another fight off certain pests or use natural predators.

ACTIVITY 4:

Rationale - To understand how past traditions in a culture affected land use.

Ask group members to bring in some object from the past that they consider valuable. Each member of the group shows the "treasure" and tells about it. The group leader can then lead the discussion into the past and its lifestyle (ususally it will focus on agragarian lifestyles). The discussion can lead to the differences between the present member's environment and his or her grandparent's and great-grandparent's lives. It should be pointed out that there can be no separation of the culture and traditions of the people and land use, whetrher it is in the city or country. (FOR SUGGESTIONS SEE BELOW.)

SUGGESTIONS:

1. Some old cooking utensil can lead to a group discussion about cooking methods, fuels that were used (wood, coal, and etc.) and how this effected the land. Were all the forests cut down for fuel? Is there mining in the area? How did this affect the landscape? Also traditional foods can be discussed. What kind of crops and animals were used to feed families? How did cattle,

pigs, sheep, goats, etc. affect the land? Talk about traditional farming methods (also this can be done with tools).
2. Working tools can lead to discussions about what kinds of jobs were there. How did this affect the land? As mentioned, mining and farming, or working in factories, and etc., all directly or indirectly, impacted the land.
3. Some group members may bring in books. What topics were important to the people and how did it reflect the times? Were people mostly illiterate and did this matter? Were the jobs mainly farming or assembly jobs in a factory where maybe reading and writing was not so important? How did this affect people's attitudes toward their environment?
4. Religious objects ore often brought in for the group to see. A discussion can follow about how religious attitudes have affected attitudes toward the environment. One example is the Judaic-Christian outlook that nature is to be used by humans because they are the most superior creations of God. Let the group members think about how past religious or lack of religious views shaped attitudes toward the environment.
5. Musical instruments are interesting. The group can discuss what types of dances and songs were typical for their forefather's and mother's. What were the themes? Why did people need to express these ideas or activities in their songs or dances? What type of costumes did they wear? What materials were used and who made them? Again these all can relate to customs and traditions that affected the land.
6. Clothes are often considered a "keepsake." This can lead to similar questions about materials as costumes did above, and who made them? If clothes are leather, what type and where did it come from? If it is linen or some type of cloth, was it a local textile and again how did this effect the land? Maybe it was produced in a textile factory. In this case, discuss factories and their incredible effect on the people and their environment.

These are only a few suggestions but they can be almost limitless because every activity that humans do impacts their environment and the land that they live upon.

ACTIVITY 5:

Rationale - To interview the elderly about activities in the past that impacted the land.

Have each group member interview an elderly person orally, by taking notes or by tape recording them. Ask the elderly person about how the environment was different for them or their great-grandparents, grandparents or parents than from the present. For instance, if they lived in a village, did they own animals or farm? This can be followed with questions about their specific activities. If they lived in a town, what kind of work was done and how did this effect their lives and environment? Was there much traffic? Discuss transportation changes and how it has affected their enviroment. Did the rivers, lakes and etc. freeze in the winter or was there more snow? (If it is different now, could it be from the greenhouse effect or pollution?) Does the elderly person remember various sources of energy that was used, for instance, like water power from mills? For further questions you can refer to SUGGESTIONS IN ACTIVITY 4.

The interviews should not be more than about 10 minutes in length. When the group meets again, everyone can orally present the most important parts of their interview (paraphrasing). The presenter and the group can discuss some of the changes in the

environment that have occurred from the elderly person's memories of the past and the group's perception of the present.

ACTIVITY 6:

Rationale - To link everyday human activities and their relationship to the land.

Each person can list five specific activities that they do in their own lives - either things they like to do or have to do. Pair up the individuals and have them discuss how each of their activities impact the land. Have each pair pick a few of their activities (the number of activities will depend on the time and interest of the group) and present them to the class. Have them explain how these activities impact the land.

The main point of Activity 6 is that the leader should emphasize that even the smallest human activity is related to the land and has its effect. For "good or bad," humans have always impacted the land by their very existence as a species, and in turn, the land has always shaped the peoples' lives.

SUGGESTIONS:

1. Taking care of bodily functions - For example, if an individual washes themselves everyday, the group can discuss water sources. Where does their water come from and where does the wastewater go?
2. Job related - For example, if they work at a computer, discuss the toxic effects of manufacturing computer components (use of CFCs which destroy the ozone layer) and how to dispose of them when they are old. If they work in a factory talk about the effects of a factory's emissions or discharges on the environment. You can discuss energy sources needed to produce something and where does that come from and what happens to the energy after it is used. Talk about what raw materials are needed to produce the item. As a leader you can relate land use to any job because some sort of energy, raw materials or technology must be used. (These must come from some source related to the land). Of course, if the individual works in agriculture, there is a direct link to the land.
3. Recreational activities - For example, outdoor recreational activities rely almost 100% on nature for weather or the terrain of the country. Indoor activities depend obviously on being done inside a building, which required materials to be built and maintained and some type of product needed for the activity (this, too, was made from from raw materials). For instance, if a person likes to relax by reading, the group can discuss that this requires paper from trees and maybe artificial lighting, which comes from an energy source.

As mentioned in previous activities, there are almost limitless possibilities because every human activity impacts the land in some way.

ACTIVITY 7:

Rationale - To develop skill in planning an "environmentally friendly" community.

1. Have everyone imagine his or her neighborhood in childhood. What was the most important places for him or her, when they were young. Have everyone draw a simple map of their neighborhood with

"important" features for that person on it and label them. Have each one present their map and talk about what they chose to put on it. It could be houses, a school, rivers, mountains, agricultural fields, animals, roads, etc. How big an area did they choose to define as their neighborhood? Discuss what is important for each one and why does it have meaning for that person?

2. Have groups of two to four people think about the "perfect" community design. Tell them that they will be discussing and drawing on a large piece of paper the community where they would like to live. Suggest that they think about the community's needs for industry, recreation, housing, farming and public services (buildings; such as, schools, hospitals, water treatment plants, incinerators and other services like transportation, etc.). It is important for them to think about a water supply for the citizens of the community. Tell them to place these things wherever, they think the best location is. When they are finished have them explain their communities and the reasons for the placement of things to the whole group. Ask them why they chose certain places for certain things?

Present to the group the idea of a planned community. Ask if they know about zoning laws and then discuss any that may be in their community. They may have none. The laws may be inadequate or not enforced. Suggest that there are zoning laws which specify where to place structures and which structures. The law could define specific areas for the development of industry, commerce, housing, recreation, roads or just allow for natural areas. Other areas should be zoned for public use, such as: water treatment plants, landfills and recycling stations, schools, hospitals, etc. A zoning law should protect the community's water source(s) by forbidding any nearby development, and from contamination from farms' fertilizers and pesticides by developing buffer zones between farmland and water sources.

Discuss that citizens must have a law that makes it possible to meet with government officials at a meeting before any project is begun, to hear about any plans and to allow for public input into the process, as to whether this project is needed by the community. A question to be asked is whether it will be done in the best possible manner with the least environmental empact? It is also important to know who makes the decisions about changes in their community and to feel like the citizens of the community can have some influence on this person(s) decision-making.

Have them return in their small groups to their map of a "perfect neighborhood" and see if they want to make any changes and why. Discuss these changes with the entire group.

ACTIVITY 8:

Rationale - To analyze pictures of activities impacting the land.

Go through magazines and cut out large pictures of activities affecting the environment. Some of the pictures used in this activity can be: pictures of highway complexes and traffic, skiing areas, many shops or a marketplace, human crowds, landfill or incinerator, a scientist at work outdoors, a castle on top of a hill with agricultural fields around it, a man ploughing his fields using a horse team, various animals (endangered species), etc. Divide the group up into smaller groups of two or three.

Either give or have these small groups choose one of the pictures. Have them write something about how these activities (in their picture) affect the land in the past, present or future. They can write in large print with magic markers on big paper so that the whole group can read it later. Have the small group members create a paragraph or so. Each member of the group writes one sentence and then the next person adds to it so that a group story is created. When everyone is finished, hang up a group's paper in front of the large group. Have each member of that particular group read his or her own sentence out loud to everyone until the whole story has been read by all the members of the small group. Ask for comments about the story itself from the large group after the story is read.

ACTIVITY 10:

Rationale - To learn the democratic process of compromise in relationship to land use.

AT THE END OF THE UNIT is a fictional story called "Kilbasa National Park." The story is about representatives of special interest groups meeting to discuss the future of the park. Before leaving the meeting general agreement must be reached on how the land in Kilbasa National Park will be used and its future. Assign or have individuals pick a role. These include: Park Director, National Rock Climbing Association President, Chairperson for the Archeological Department of the National University, Mayor of Kilbasa, President and owner of Stay Healthy Drug Co., President of Fuelco and Chairperson of the National Outdoor Recreation Association, the largest outdoor recreation organization in the country. Read through the story with the group. Make sure that everyone understands it. Give them a few moments to prepare the position that they will take. The leader acts as the moderator and starts the meeting by asking who would like to present his/her viewpoint. If people are hesitant, begin with the Park Director. If people are reluctant to talk, have each person present their view. Then, the leader can ask the group, "How can this be worked out?" Remind them that in a democracy, everyone has a right and a responsiblity to be involved in the decision-making process. This activity points out the difficulties in determining land use, as well as developing skills in the democratic process

DRY LAND FARMING: AN ART AND A SCIENCE

Before modern farming methods, farmers lost many crops to dry weather. Sometimes dry periods lasted for many years. In those days, a long dry period, or drought, often turned the land to dust. Then winds came along and blew the good land away. This happened year after year.

Farmers didn't understand how to plant and so they made the situation worse. Each year they planted the same crops. They never gave the land a rest. The land became poor with too much use. They always planted in long, straight rows. They broke the land into fine dust. They never planted trees to break the strength of the wind.

The worst dry period was the drought of the 1930's. Good farmland on the Western Plains became a Dust Bowl. Farmers had a very hard time until they started to use modern farming methods.

Now farmers plant a different crop every year. Some years they give part of their land a rest. The land stays healthy and rich. Modern farmers form rows in curving lines and plant trees to stop the wind. Modern crops are much larger and more dependable.

Dry land farming is both a science and an art. From the air, the farms look like pieces of modern art.

Questions

1. Why did farmers lose so many crops?
2. How did the drought change the land?
3. What did the wind do to the dust?
4. How long did the dry periods last?
5. How did farmers make the situation worse?
6. What happened on the Western Plains in the 1930's?
7. What methods do modern farmers use?

Soil Story

A rock

Lichen (algae and fungi growing together) begin to grow on the rock. They secrete an acid that breaks down the surface of the rock.

Spores land on the lichen and moss begins to grow.

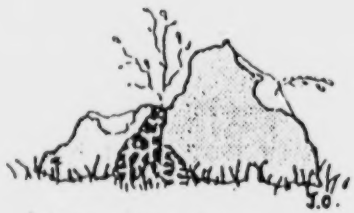
Passing seeds land on the moss and use the moisture and soil to begin growing.

Plants grow and roots spread over the rock.

The rock cracks.

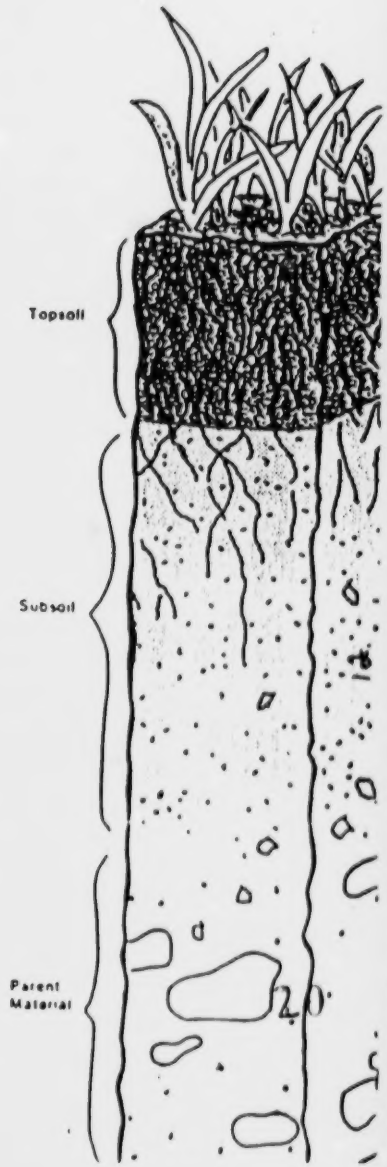
Water and snow freeze and expand in the crack, making the crack larger.

Plants grow down into the crack. Organic matter fills in the crack.



Larger plants and more weathering make the crack wider and eventually break the rock into two smaller pieces.

The story begins all over again on the two smaller pieces of rock - and continues until they are totally broken down into soil



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As society places more demands on our natural resources, national parks and nature reserves will come under more pressure. People for various (variety, many) reasons will want to use the land for different, often conflicting (opposite) purposes.

Below is an activity based on this problem. The group must come to some agreement as to how the land is (must) to be used.

KILBASA NATIONAL PARK

Kilbasa National Park is a small park located in central Moravia two kilometers from the small tourist town of kilbasa. Although the park is small, it has exceptional (very special) limestone formations. These formations are some of the most spectacular (very atractive) in Central Europe. On the top of the formations are ruins (in excelent condition) of a fortress/castle dating back to the twelfth century. The limestone formations also have special appeal (interest) for rock climbers, since many of the exposed (open) sides are sheer (flat, steep) and offer the most challenging climbs in Europe. In fact the National Rock Climbing Association has plans to host the world rock climbing competition at the park later this year.

On those areas of the limestone where vegetation can grow a variety of flora can be found, including a very rare species of astors. In fact this is the only known habitat where these flowers are found in Europe and the largest of only six places in the world where they are found.

For all of the above reasons Kilbasa National Park is the most popular park in the country. Through out spring , summer and autumn there is a constant stream of visitors to the park who greatly enjoy the park's attractions. Last year the park had a record 600,000 visitors. Because of this, the town of Kilbasa has become very wealthy by providing (offering, giving) services to the tourists.

Recently, several events have occurred which might change things at Kilbasa National Park.

First, because of the great number of people who are visiting the park, the National Park Service wants to charge an entrance fee to all people who want to visit and use the park. The money is necessary to maintain (keep up, fix up and repair) the park because of the heavy use.

Second, researchers for Stay Healthy Drug Co. have isolated chemicals from the astors found in Kilbasa National Park that show great promise in curing AIDS.

Third, archeologists from the National University have just discovered human bones, tools and other artifacts dating back 5,000 years at the base of the limestone formations and want the entire park closed for three years so they can investigate the area.

Finally, Geologists for Fuelco, the national oil company, have just discovered oil in the park. Preliminary (first) research indicates (shows) the deposits may be enormous (very big) and could meet all the country's fuel needs well into the next century. Oil exploration would require the park being closed completely.

Representatives from all of the above special interest groups are meeting now to discuss the future of Kilbasa National Park. Before leaving the meeting general agreement must be reached on how the land in Kilbasa National Park will be used and its future. Representatives to the meeting include:

Park director
National Rock Climbing Association President
Chairperson of the Archeological Department of the National University
Mayor of Kilbasa
President and owner of Stay Healthy Drug Co.
President of Fuelco
Chairperson of the National Outdoor Recreation Association, the largest outdoor recreation organization in the country

LAND PLANNING

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AIR POLLUTION UNIT

One of the worse environmental problems for Central and Eastern Europe is air pollution. In the Czech Republic the main cause of pollution is from the combustion of fossil fuels. Most energy is produced by burning soft, brown coal. This source emits oxides of sulfur, carbon and nitrogen, particulates and heavy metals.Many industries also add their pollutants to the air from their smokestacks. Examples in the Czech Republic are the chemical, metallurgic, building, machine industries, etc. According to the Ministry of the Environment of the Czech Republic in its book, The Environment of the Czech Republic, the former Czechoslovakia is one of the worst air polluters, matched closely by the former Eastern Germany and Poland. However, the Czech levels of pollution are greatly surpassed by the eastern part of the former USSR. (It should be noted that many western European countries also indicate very high levels of air pollution). In the Czech Republic ozone monitoring at the ground level only began in 1989 (since the Revolution), so there is insufficient data, except to say that in the industrial areas there is a direct interaction between nitrogen oxides and ozone. Another large source of air polluters are autos, trucks and busses. The use of unleaded gasoline and the lack of catalytic converters creates additional emission problems. Neighboring countries add their airborne pollutants to many areas of the former Czechoslovakia.

ACTIVITY 1:

Rationale - To analyze the global warming problem.

1. Without discussing global warming or global climate change, introduce the following activity by saying that we have two articles expressing two different points of view by people in the scientific community about global warming. Two leaders will be needed. One half the group will read out loud one point of view and the other half of the group will read the other point of view out loud with another leader. (SEE BACK OF UNIT). Explain any new technical vocabulary. (SEE BELOW FOR A BRIEF EXPLANATION OF GLOBAL WARMING FOR THE LEADER). Separate the six questions for later use from the article of Scientist 2 (on the same page).

When both groups have finished, divide everyone into pairs. (One partner from Scientist 1 group and the other from Scientist 2 group). Give each pair the six questions to discuss from the point of view of the article that each one read. They can take notes, if they wish. The pairs return into a whole group and the questions are discussed by everyone.

DEFINITIONS: (MORE DEFINITIONS ARE AT THE END OF THE UNIT)

GLOBAL WARMING ACTIVITY - The greenhouse effect causes global warming or global climate change. As carbon dioxide, which has increased by 30% since 1850, methane gas, CFCs and other products of combustion increase in the troposphere (the layer in the atmosphere lowest to the ground), a cloud is formed so heat is trapped from rising and the earth heats up.

Some scientists say that there is an opposite effect. Since cloud cover is created by pollution, there is less sunshine so the earth is cooler. The temperature rose by 1 degree Fahrenheit over 100 years but this was not constant. Some scientists think that this is a normal climate cycle.

GLOBAL CLIMATE CHANGE - predicted changes in the climate because of pollutants in the atmosphere, which could cause altered weather patterns and the rising of sea levels. This was called GLOBAL WARMING. However, since all scientists do not agree whether the earth is warming up or cooling down, the term was changed to GLOBAL CLIMATE CHANGE (as explained in the Scientists' Articles 1 and 2).

GREENHOUSE EFFECT - heat is trapped by pollutants in the air and so the earth becomes warmer (SEE OTHER DEFINITIONS AFTER ACTIVITY 5).

2. After discussing the above activity, pairs can make up two sentences leaving one word blank for others to fill in. The topic of the sentences can be about global warming from the two articles that they read or anything that they discussed. Each group member reads one of his/her sentences out loud. The remainder of the group numbers his/her paper. The individual writes down what s/he thinks is the missing word. When this is finished, a group member orally gives an answer. If it differs from others than the different answers are also offered and discussed. This reinforces what the group members learned.

ACTIVITY 2:

Rationale - To identify freon (CFCs) products, destroyers of the ozone layer in the stratosphere.

1. This activity discusses some of the primary sources of freon, a common chemical that is an example of CFCs (SEE END OF UNIT FOR DEFINITIONS). It also increases the particpant's vocabulary. Bring to the group ten items. Five of them will be a source of CFCs (freon) and five will not. (SEE THE END OF THE UNIT FOR THE PICTURE ABOUT OZONE FOR IDEAS). Of course if it is impractical to bring in the items, than bring in pictures or photos of them. Some ideas for freon producing items are: Aerosol spray cans, polystyrene (foam) packing material, polystryrene cups, plates, etc., pictures of air conditioners, refrigerators, cars (air conditioned), and computers (during the manufacturing process, freon is used). Five other items could be plastics, glass, picture of a factory with emissions, cigarettes, a detergent box and other things that will lead to a discussion about their harm to the environment but not producers of CFCs. Have the group individually write down in a column whether an item belongs in a "Destroys Ozone" or "Doesn't Destroy Ozone" column, as you hold up one item at a time for the group to see.

Then present information about CFCs in the environment (INFORMATION ABOUT CFCs CAN BE OBTAINED FROM THE DEFINITIONS). After the presentation, answer questions about the topic or explain any vocabulary words. Again, hold up each item and ask the group members if they changed their minds regarding where to place each item ("Destroys Ozone" or "Doesn't Destroy Ozone" column). Finally, hold up the items for the last time and have the participants orally identify the item and where it should be placed. Ask for any differing opinions.

ACTIVITY 3:

Rationale - To discuss decisions about freon use in daily activities of life.

Explain to the group that they are going to create a T.V. news

program. Reporters will be sent "into the fiel to interview a variety of "characters," who use freon in their daily lives. The group will be paired. One will be a reporter and one will be a "character" (SEE END OF UNIT). Each "character" will chose a "role card," which will have information about who s/he is and how s/he uses freon in his or her daily lives. The reporter and character will work together to form interview questions and answers about the character's attitude toward his or her use of freon. Each pair will have a different character role and they should not reveal this identity to the other couples until T.V. time.

When everyone is finished preparing their interviews, the leader announces to the group that there is now a T.V. program and welcomes everyone. The leader says that the program is about to begin. The topic for the evening is introduced to the "audience," " How Do People Feel About The Use Of Freon?" The leader welcomes the invisible audience and tells them that all his or her reporters were sent out into the "field" to interview people and to find out how the common person ("the man or the woman in the street") feels about freon use. He or she announces that the reporters have just returned and brought some people back with them. The reporters, characters and moderator sit around a table in a "U" shape. Everyone should have their character's name and role title in front of them, so everyone can identify each other. The leader then asks the different pairs to present their interviews for the T.V. audience. The pairs present their interview in character to the group. They can use notes.

CHARACTERS (Names can be changed to be appropriate to the country):

Hana Homemaker:
She lives in a tiny apartment with poor ventilation. She uses air conditioning in one room during the hot summer. She has an elderly, physically handicapped parent living with her. She uses a refrigerator and wouldn't dream of not using it. She also uses aerosol spray cans for her hairspray and cleaning fluids.

Roman is the Repairman for Refrigerators and Supermarket Coolers:
He repairs refrigerators and coolers in supermarkets. When he repairs them, he must open the systems up. During this process, freon, the coolant is released. It is a liquid under high pressure but instantly becomes a gas in the atmosphere when it is released.

Ales is an Auto Dealer and Salesman:
People want air conditioning in their new cars. It is more comfortable. Dealers and salespersons also make more money when they sell a car with air conditioning in it. (A car's air conditioning system uses kilograms of freon in comparison to a few grams used in air conditioners in homes.)

Alex is an Auto Mechanic:
Alex uses freon aerosol sprays to clean auto parts, lubricate parts in the engine and even to unlock frozen keyholes in the car door.

Helena the Hairdresser:
Helena uses aerosol sprays on her customers all day long.

Karina the Computer User:
Karina uses her computer to write environmental articles everyday

for an environmental magazine. Manufacturers used freon when they produced her computer.

Gizela the Glass Packer:
Gizela uses thousands of small pieces of polystyrene to protect the crystal made at her plant from breaking during shipment.

ACTIVITY 4:

Rationale - To reinforce activity 2 and 3.

1. Have each pair create two statements about the ozone problem one for each person). If you chose, you can have them stay in character (SEE THE ABOVE ACTIVITY) and write a statement from that perspective. The statement should leave one word blank. Each person reads one statement to the group. Individually, participants number their papers and write down only the missing word next to the appropriate number. When everyone has read their statement and answered everyone else's individually on their numbered paper, go around and have everyone read theirs out loud for a final time. Choose someone to give the missing word orally to the group that they have written on their paper as an answer. Ask if there are any different answers. Discuss these answers with the group.

ACTIVITY 5:

Rationale - To create a short "strip" story about ozone.

A brief story about ozone is written by the leader. (SEE BELOW FOR AN EXAMPLE). It is cut up into "strips," small pieces of paper with a half or whole sentence written on it. The strips are mixed up in order and the members of the group have to place them in sequence.

Everyone choses a strip and reads his or hers to the group. No one can look at the other's but the strip can be read out loud as often as necessary. The group must decide the sequence of events and each member should stand or sit in that position in order to recreate the story. When finished the group should be standing or sitting in sequential order. Once again, each member reads his or her strip to create the whole story in sequence.

AN EXAMPLE OF A STRIP STORY ABOUT OZONE:

1. An old refrigerator is taken to the dump.
2. Freon leaks out of its coils as it rusts.
3. One CFC molecle drifts up into the stratosphere where it is activated by the sun.
4. The activated CFC molecule then destroys the ozone molecule.
5. It breaks apart.
6. As a result, more ultraviolet rays reach the earth's atmosphere.
7. Now, Mary, sunning on the beach burns more easily than she use to.
8. And her father now wears sunglasses to prevent cataracts.

You can add or subtract sentences according to the number of members in the group. You can also create your own.

DEFINITIONS:

CFCs (CHLOROFLUOROCARBONS) - chemicals that are harmful to the

ozone layer in the sratosphere, the layer of the atmosphere closest to the sun. CFCs are the major cause of ozone depletion. They are used to produce plastic foam products (polystyrene cups, plates, packing materials and the like) and when these products are broken, they release freon. Freon, a CFC chemical, is used as a coolant for air conditioning, for aerosol spray in cans and other products.

CFCs become activated by the sun and release "ozone eating" chlorine molecules into the stratosphere (SEE ABOVE FOR DEFINITION OF CFCs). These changed molecules then destroy the ozone molecules by splitting them (ozone is created by sunlight and oxygen). This process creates "holes" in the ozone barrier (a very thin layer) and also allows the harmful ultraviolet rays (UV) to reach the earth's surface.

Some scientists disagree that CFCs are causing the loss of ozone. They feel that there is not enough proof and to ban these ozone destroying chemicals would only create hardship for producers and users of the products made from these chemicals.

OZONE - oxygen plus sunlight produces ozone molecules in the outer layer of the earth's atmosphere closest to the sun (the stratosphere). This chemical reaction creates a fairly stable situation (State of Equilibrium) of oxygen qnd ozone molecules in the stratosphere. Ozone is important because it blocks harmful ultraviolet rays from reaching the earth's surface. The layer of ozone in the stratosphere is "GOOD" ozone.

However, there is another layer of ozone that is being produced near ground level (low-level ozone) that is considered "BAD" ozone. This occurs when pollutants, particularly smog (SEE BELOW), mix with sunlight and create a reaction so that visiblity is low and respiratory and other problems are produced. The extra ozone on the ground level can't reach the stratosphere.

FOSSIL FUELS - these are fuels formed by ancient plants and animals, such as, coal, oil and gas. The burning of these fuels (combustion) creates many air pollutants, such as; carbon, nitrogen and sulfur oxides, and particulates.

SMOG - low visibility, caused by ground level ozone ("BAD" ozone), sulfur, carbon and nitrogen compounds, particulates (solids in the air, such as soot) and other pollutants in the atmosphere.

ACID RAIN - when precipitation (snow, rain fog, etc.) mixes with pollutants in the atmosphere, it makes the precipitation acidic. The scale for acicidity versus alkalinity is called pH. A neutral pH is 7. Anything under seven becomes acidic and everything above 7 becomes alkaline. Certain levels of acidity and alkalinity are necessary for living things. Many animals and plants can not live in the acid conditions created by the the acid rain (usually below 5, animals begin to die).

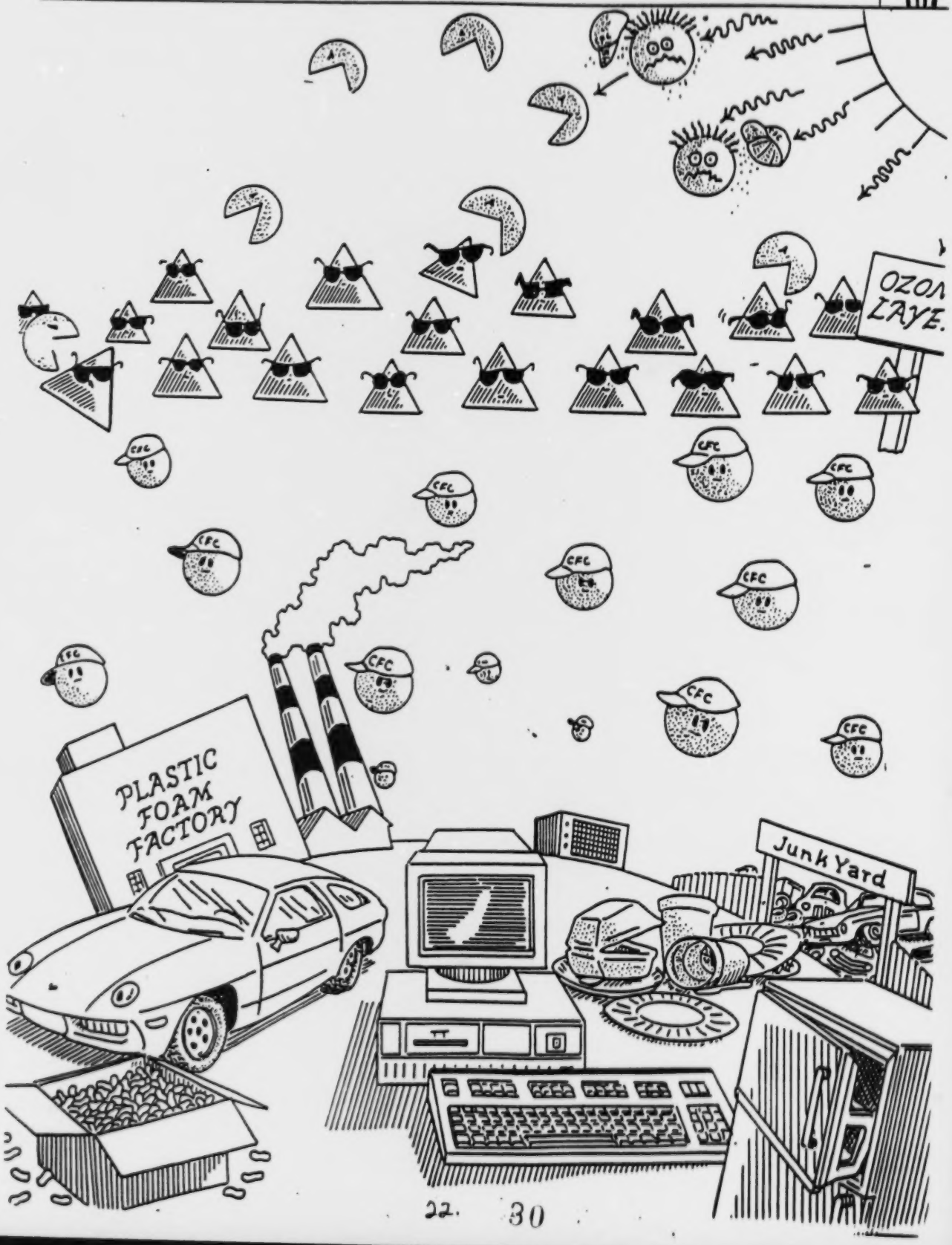
AS EXPLAINED ABOVE IN THE DEFINITIONS, "GOOD" ozone is in the layer called stratosphere (1.5 millimeters thick). The ozone filters UVB or a type of ultraviolet ray from hitting the earth. The other ultraviolet rays are UVA which doesn't hit the earth for other reasons and UVC which passes down to the earth's surface. Ozone is created by the combination of oxygen and sunlight. It reaches a state of equilibrium. This is when the ratio of oxygen molecules to ozone molecules stabilizes. However,

certain chemicals released into the earth's atmosphere destroys the ozone molecules and creates a "hole" in the ozone layer allowing the harmful rays to reach the earth's surface. Some of these chemicals are CFCs (FREON) known chemically as chloroflourocarbons, hydrochlorofluorocarbons, carbon tetrachloride (used in cleaning solutions) and others.The chief culprit is the CFCs. The chlorine molecule changes and becomes an "ozone eater" by splitting the ozone atom into oxygen. There is now a law in the U.S.A that forbids the manufacture of CFCs but substitutes them for hydrochlorofluorocarbons which are only less harmful. No substitute has been yet found for CFCs. Above Antartica is a large hole in the ozone layer. However, ice particles are thought to accelerate the destruction of the ozone and in the summer the hole becomes smaller.

WRITE A STORY

COPYCAT PAGE

HOLEY OZONE!



COPYCAT PAGE — A HEATED CONTROVERSY/1

SCIENTIST 1

It's time to face the facts—the increasing amounts of carbon dioxide and CFCs in the atmosphere are making our planet's climate warm up. We've seen the warning signs in our increasing world temperatures. The 1980s were the hottest decade in recorded history—six of the warmest years ever recorded were 1981, 1983, 1986, 1987, 1988, and 1989.

While this isn't proof that global warming has begun, it certainly should warn us that something is happening to our climate.

Over the past 100 years, average world temperatures have risen by about 1°F. That may not seem like much of an increase, but keep in mind that temperatures today are only about 9°F warmer than they were during the last ice age. It takes only a small change in temperature to cause big changes in our world. And if we continue to put as much carbon dioxide into the atmosphere as we're putting into it now, the world's average temperature may increase by 3 to 10°F within the next 50 years.

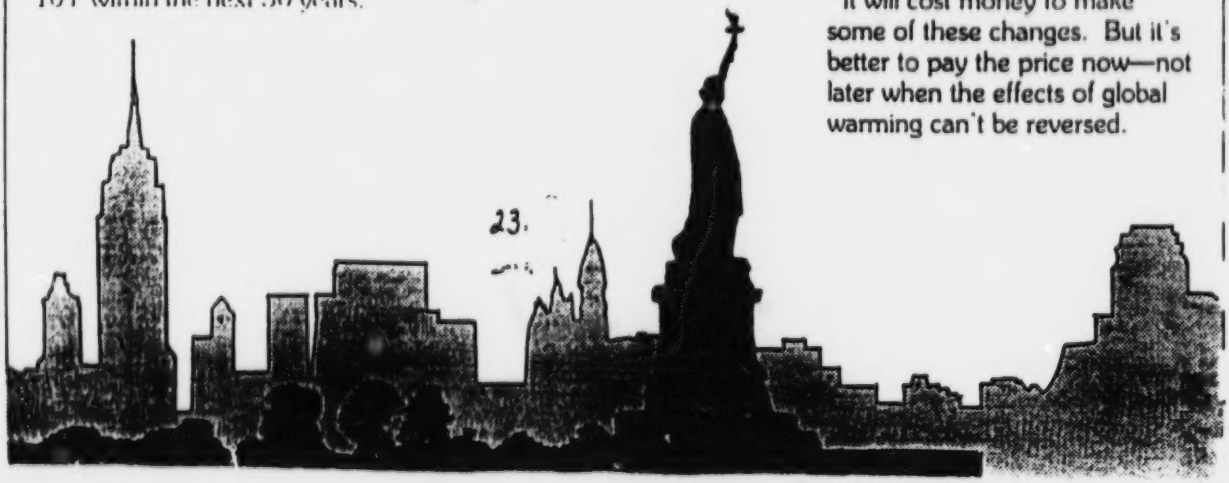
If temperatures do rise, we can expect some drastic changes to take place. As temperatures go up, sea levels will rise and many coastal areas will become flooded. The warming could make droughts occur more often in certain areas. Some places, like the Midwest, could become so hot and dry that many crops couldn't grow there anymore. And all over the world, plants and animals may not be able to adapt quickly enough to the sudden changes in their habitats. Some species could even become extinct.

Some people claim that we should wait until we're absolutely sure of global warming before we do anything to control it. I disagree. If we wait too long, it may be too late to prevent damage from the warming trend.

We must cut carbon dioxide production by at least 20 percent and phase out CFCs *now*. And since people in the United States produce a lot of the carbon dioxide and CFCs that go into the air, we have to set an example for the rest of the world. We must develop safer chemicals to replace CFCs. We have to switch to solar power and other alternative energy sources. And until we make that switch, we have to use less fossil fuel and become more energy efficient. Industries that continue to use coal and other fossil fuels should be taxed for the excessive carbon dioxide they release. A tax should also be placed on gasoline to encourage people to drive less. And car makers should be required by law to make cars that get better gas mileage.

Individuals must do their part too, by taking public transportation instead of driving their cars so much and by buying more energy-efficient appliances and cars. And we have to stop the burning of tropical rain forests. By preserving these forests, we can reduce carbon dioxide emissions caused by the burning *and* save the trees and other vegetation that help absorb carbon dioxide.

It will cost money to make some of these changes. But it's better to pay the price now—not later when the effects of global warming can't be reversed.



SCIENTIST 2

There's been a lot of concern lately that the world's climate is warming up. Some scientists say that the increased amounts of carbon dioxide and CFCs in the atmosphere are causing this global warming. According to them, the only way to avoid global disaster is to cut carbon dioxide emissions by at least 20 percent—a move that would affect people all over the world.

I say there's not enough scientific evidence to back up this call for drastic action. Let's consider the facts. It is true that there's more carbon dioxide in our atmosphere than there used to be and that we have added gases, such as CFCs, that were never part of our atmosphere before. But there's just not enough evidence to prove that these gases are making the world warm up. In the past 100 years, average world temperatures have risen by only 1°F. And this hasn't been a constant rise—between 1940 and 1970, world temperatures actually dropped, and some scientists suggested that another ice age might be on the way. This latest rise could be just another small change in a natural climate cycle.

It's very important to keep in mind that many of the predictions about the effects of global warming are based on *theory*. Scientists have come up with these predictions by plugging information about our atmosphere into computers. The computers make predictions about what will happen if we add certain amounts of carbon dioxide and other gases. The problem is, different computer models can give you different answers! Some models have predicted that the increase in carbon dioxide will cause more clouds to form. These clouds would block sunlight and cancel out much of the warming. And, according to other models, it's possible that the earth's huge oceans will absorb any extra heat. We just don't know enough yet about how our atmosphere works.

Because of this uncertainty about what is really happening in our atmosphere, I believe we need to do more research before we make any big changes. To significantly cut the amount of carbon dioxide we put into the atmosphere would make life harder for many people—especially those living in less developed countries. How can we ask them to cut back on releasing carbon dioxide when they're just now getting the cars and factories that people in more developed countries have had for so long? And in the United States, cutting carbon dioxide production would cost billions of dollars each year. Forcing industries to stop using fossil fuels might drive some smaller firms out of business and hurt people in regions where coal mining provides many jobs. We must do more research before we make changes that, in the end, may cause more harm than good.

QUESTIONS

1. What are the main points brought up by each scientist?

2. What are the advantages and disadvantages of the alternative presented by Scientist 1?

3. What are the advantages and disadvantages of the alternative presented by Scientist 2?

4. Can you think of a course of action that is a compromise between the two plans presented by the scientists?

5. What do you think is the best course of action? Why do you feel this is the best thing to do?

6. Do you think it's important to stay informed about scientific issues? Why or why not? What are some ways you can affect the decisions that politicians and other leaders make about the environment?

AIR POLLUTION

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NUCLEAR ENERGY UNIT AND THE MEDIA UNIT

Nuclear energy is a very controversial issue all over the world. In Central and Eastern Europe there are many Soviet-designed nuclear plants that are poorly designed and maintained. These plants are viewed as very dangerous because of radiation leaks and potential accidents in the future. Citizens remember the Chernobyl accident and many inhabitants are still living with its results.

In the Czech Republic, there is a great deal of controversy about nuclear power. A large Western company has proposed to finance a very large nuclear power plant complex in Bohemia. Many people are opposed to it. There is also grass root's opposition to the disposal of nuclear waste from another, existing nuclear facility. It is feared that both situations have potential for causing grave health problem to the citizens.

However, emissions from coal-burning power plants are the number one cause of smog in the Czech Republic. Lignite or brown coal is used and this creates high levels of pollutants in the atmosphere, which also causes health problems.

Some options to solve the country's energy problems might be: to raise prices for energy consumption in order to stimulate energy efficiency and encourage conservation, to use cleaner fuels (eg. natural gas), to explore using sustainable energy sources (eg. solar, wind, water, etc.),to use electrostatic precipitators to control particulates or to use a coal washing process. (This process suspends finely, ground coal in a liquid so that denser materials sink to the bottom, resulting in a reduction of the amount of sulfur and ash emitted from coal burning.)

Since Eastern and Central Europeans have received few, if any, opportunities to make decisons about their own destiny during Communism, citizens have had limited experiences on gathering or evaluating accurate information about an issue in order to make their own decisions. In the past the Communist regime controlled the media to suit their purposes. Everything was State controlled and centralized. There was no competition or public conflict over any governmental decision. It was not permitted.

This unit deals with the pros and cons of the very important and controversial issue of producing nuclear energy power. It also considers the equally important issue of how the media influences the way citizens make decisions about their lives in a democratic, free market system, whether it be about such a complex topic as nuclear power or , as simple, as buying a pair of shoes (if that is, indeed, simple).

ACTIVITY 1:

Rationale - To identify four advertising techniques used in the media (SEE END OF UNIT).

Discuss the meaning of the words URGENCY (hurry), DESIRE (you need it), CONFIDENCE (trust me) and ATTENTION (hi! stop and look). (SEE END OF THE UNIT). Then hold up a number of different advertisements in front of the group one at a time. Have each member of the group write down which one of the above techniques of persuasion (this word will also need explaining) did s/he think was used. Again, hold up the same advertisements and discuss which technique individuals chose and the reasons.

Explain that there is no right or wrong answer. It is how each person perceives it.

ACTIVITY 2:

Rationale - To practice identifying four advertising techniques (SEE ACTIVITY 1) used in a pro and con nuclear energy advertisement.

Have each member of the group do WORKSHEET 1 (SEE END OF UNIT). Then, the members of the group each read a sentence of an anti-nuclear and pro-nuclear advertisement (SEE END OF UNIT). It is possible to substitute these pro and anti-nuclear advertisements with different ads relative to your country, taken from leaflets, magazines, newspapers and/or other sources. Have the group discuss which of the above techniques (SEE ACTIVITY 1) were used by the advertiser. The group can discuss the importance of knowing who wrote the advertisement, for which audience and the message conveyed.

Have the group members read to themselves his or her own response from Worksheet 1 and think about whether any changes would now be made. Discuss this.

ACTIVITY 3:

Rationale - To analyze information put into one statement about nuclear energy.

Each person reads one of these statements or "advertisements" (SEE END OF THE UNIT - ON BACK OF SHEET ARE ANSWERS). These can be altered to make them relevant for individual countries. In fact a totally different set of statements can be created. Each person reads one of these statements or "advertisements." Members of the group then discuss whether the sentence was written by an anti-nuclear or pro-nuclear advertiser. After this is discussed, the group decides which technique was used (SEE END OF UNIT FOR STATEMENTS AND ANSWERS ON THE BACK).

ACTIVITY 4:

Rationale - To understand how media manipulates people by presenting only selected information.

Divide the group into four or five people. Give each group a part of a picture (SEE END OF UNIT). In this case, it is an airplane. Put the picture in the center of a larger piece of white paper. Instruct all the group members to write any feelings or thoughts relating to the environment that the picture evokes on the white paper around the picture with arrows pointing to the picture. After a short time, have each group read out loud their remarks to the whole group. Next, give them another picture and tell them that this is the second half of the first picture, an additional piece of the picture, eg. the plane and the animals. Again, the groups write down any feelings or thoughts that the picture now evokes in relationship to the environment. They read their remarks to the whole group. Finally, tell the group that you were not being quite honest and that you forgot to mention that there is yet another piece to the picture. This time give them the whole picture, eg. the plane, animals (stranded on the island of land) and traffic. Once again have them write their feelings and thoughts about this picture. Have them read them out loud to the group. Ask them if their opinions about the situation changed

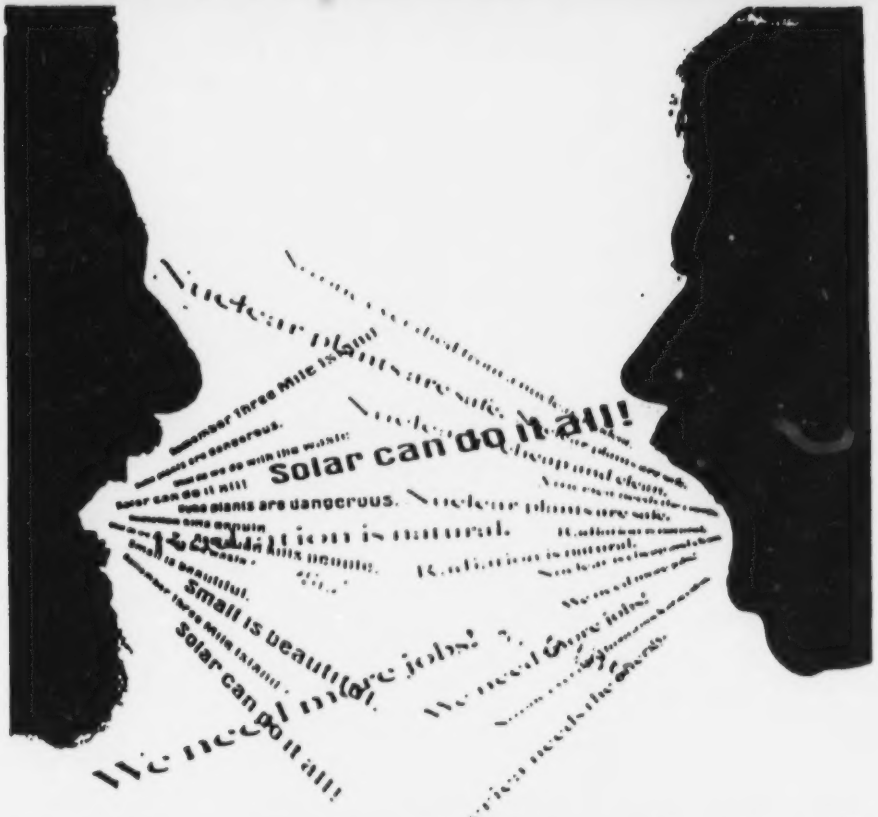
from the first picture to the second picture and then, finally, to the third picture? Discuss this. Tell them that the media also selects which information to present and which to conceal. Advertising uses this technique to manipulate the public. Ask the group if they felt like their feelings and thoughts were also manipulated by what was presented, eg. "only part of the picture?"

WORKSHEET 1

The following list includes pairs of statements. For each statement, put a mark on the line to show where you stand in relation to each issue.

1. Nuclear power is necessary to meet the nation's growing energy needs.	The need for energy can be met without nuclear power.
1 ——— 10	
2. The risk of nuclear power is small.	The risk of nuclear power is great.
1 ——— 10	
3. There is no danger of an atomic explosion in a nuclear power plant.	There is a great danger of an atomic explosion in a nuclear power plant.
1 ——— 10	
4. The technical means of high level nuclear waste disposal are currently available.	High level nuclear waste dis posal is an unsolved technical problem.
1 ——— 10	
5. Nuclear power provides many jobs for a long time.	Nuclear power plants provide many jobs but for a very short time.
1 ——— 10	
6. Nuclear energy is vital for reducing our nation's dependence on imported oil.	Nuclear energy has not and will not reduce dependence on imported oil.
1 ——— 10	
7. Nuclear plants have the best safety record of any major energy technology in America.	Nuclear plants have had many potentially dangerous accidents and are far more dangerous than other energy technologies.
1 ——— 10	
8. Nuclear power does not produce any pollution.	Nuclear power results in a great deal of pollution.
1 ——— 10	
9. Uranium is a very safe material to mine and transport if proper safety measures are taken.	Uranium cannot be mined or transported safely.
1 ——— 10	
10. The United States is the only country in the world where there are nuclear power plants.	Many countries the world over have nuclear power plants.
1 ——— 10	
11. Low-level radiation is extremely dangerous.	Low-level radiation does not pose health and safety threats.
1 ——— 10	

1. **Attention** (stop! grab it!) A. Slogans— "We do it all for you!" B. Sensory images—colors, bold type, catchy tunes	This is the technique which catches the person's attention and draws him/her to the ad. The purpose is to cause the person to find out what is being said.
2. **Confidence** (Trust me!) A. Camaraderie— "The Pepsi Generation" B. Recognition— Sports stars, movie stars C. Status—The "in" crowd	The person reading this ad feels that there is good reason to believe the speaker or the people pictured in the advertisement, either because they trust those people or identify with them.
3. **Desire** (You need it!) A. Exaggeration—"I'd walk a mile for a camel" B. Prejudice—"Blondes have more fun" C. Numbers—"Nine out of ten doctors recommend" D. Sensory images—pleasing pictures	This technique entices the person into believing that they must have the advertised item.
4. **Urgency** (Hurry up!) A. Exaggeration—"Last chance, everything must go" B. Numbers—"Twelve days until Christmas"	This technique demands or suggests the need for quick action. The person is led to believe that s/he will miss a great opportunity if quick action is not taken.



Which Side Do You Believe?

Support For Nuclear Widespread

There are two sides to the ue of nuclear power. Both sides .l strongly that there position .s correct, which makes it difficult for Czechs to form a responsible position on whether our country needs this form of energy.

But consider the "sources" of the loudest anti-nuclear noise. Among those leading the attack against nuclear power are actors and actresses, rock stars, ambitious politicians and others who think the Czech Republic has grown enough.

On the other hand, consider the many organizations that are in favor of nuclear power for the Czech Republic. These groups know the country's need for electic power is growing fast.

The health and safety record of nuclear power has been favored by most of the scientific community, National Academy of Sciences and the World Health Organization.

We are not saying that nuclear power is risk free. The truth is that risks are in "all" energy technologies. But most scientific information says clearly that nuclear poweris as safe and clean as other methods of making electricity.

Where will Czechs get their electricity? That's the real question. It's the one that anti-nuclear leaders can not answer.

Nuclear Power. Because We Need Energy.

IS THIS CRICKET?

In a massive attempt to persuade the people of Britain that nuclear power is good for them, the nuclear industry is spending £5 million a year on advertising and promotion.

Besides spending over £50,000 on their travelling "Atoms for Energy" exhibition, they have also advertised in school children's magazines and even given free badges to children.

This year, they'll be spending £200,000 on an advertising campaign aimed at a group they have identified as the strongest opponents of nuclear power – women.

You're paying for much of this in your taxes and your electricity bills.

But with your help, we could turn a big propaganda whitewash into a fair debate. Friends of the Earth want to even up the score by making the case against nuclear power.

All we want to see is fair play.

Join Friends of the Earth in the fight against nuclear power.
For more information write to us.

FRIENDS OF THE EARTH, 9 POLAND STREET, LONDON W1V 3DG

FOE AUSTRALIA - FOE CANADA - FOE USA -

STATEMENTS OF INFORMATION

1. The Czech and Slovak Republics must produce their own energy. Their security and that of the free world may depend on it.

2. Solar is all right, but nukes do it all night.

3. Safe energy: the answer is blowing in the wind.

4. Plutonium is forever.

5. Electric power is without doubt the most pollution-free major source of energy available now or in the future.

6. The nuclear clock is at five minutes to midnight.

7. Let's face it. We can live without nuclear power.

8. Happiness is a day without nuclear power.

9. Come play in the nuclear power plant park.

10. Stop nuclear power before it stops you.

11. Pull the plug on foreign oil.

12. The chance of being killed in a nuclear accident? One in five billion per year.

13. A nuclear accident; can millions be evacuated?

14. A nuclear power plant can save our nation 10 million barrels of oil a year and can produce more than 7 billion kilowatt hours of electricity.

15. The really bad thing about radiation is that you can't see it or feel it or hear it or smell it or taste it or tell it to go away.

16. Remember Chernobyl.

17. Nuclear power is the sure path to a wealthy society.

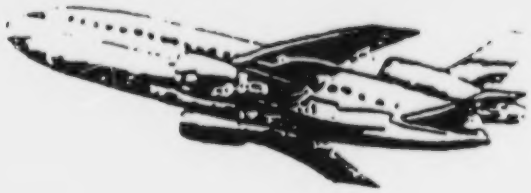
18. Alternative energy will lead us to a pollution-free society with beautiful small communities throughout the nation.

19. Our rock band performs benefit concerts for nuclear power.

20. All those anti-nuclear activists are alike. They want to stop progress; they want to stop our nation's economy.

KEY FOR STATEMENTS

1. Desire 2. Attention (slogan) 3. Attention (slogan) 4. Urgency, Attention (slogan, numbers) 5. Confidence 6. Urgency (numbers) 7. Confidence (camaraderie) 8. Attention (slogan, numbers) 9. Attention (slogan, numbers) 10. Urgency (exaggeration) 11. Urgency, Attention (slogan) 12. Confidence (numbers) 13. Attention, Urgency (numbers, exaggeration) 14. Desire, Confidence (numbers) 15. Urgency, Attention (sensory images) 16. Attention (slogan) 17. Desire (sensory images) 18. Desire (sensory images) 19. Confidence (recognition) 20. Desire, Confidence (prejudice).



NUCLEAR ENERGY AND THE MEDIA

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RECYCLING UNIT

In order to combat the growing problem of solid waste disposal, reduce litter, conserve natural resources, decrease pollution and save energy, recycling is an important step for communities to make. The factual information in the booklet, "CAA; Ten Steps to Organizing a Community Recycling Program," by The Pennysylvannia Roadside Council of Media, Pennsylvania was useful for this unit.

The leader can first talk briefly about the situation of solid waste disposal in general. All nations of the world are dealing with similar waste problems. Many magazines, books, etc. can provide information for you. According to Worldwatch Paper '76, the major types of waste are "valuable metals, reusable glass containers, recyclable paper and plastic and food wastes high in nutrient soil value." The booklet also mentions that there is a great deal of toxic waste from household items, such as: mercury batteries, fluorescent lights (PCBs), cleaning solvents, paints and wood preservatives. Other common solid wastes are textiles, wood, leather and rubber goods.

Consumerism promotes waste. People need to consume less. Industry also needs to help with this problem by decreasing their packaging, producing recyclable products and reusing them. These are important ways to conserve the world's limited natural resources.

The most important words to know are "Recycle, Reduce, Reuse and Restore." Explain these words to the group and discuss them. They are all necessary for recycling to work. Recycle is to collect and reprocess a resource so that it can be used again. Reduce is to decrease waste at its source (homes,industry, etc.). Reuse means to use a product over and over again, like old clothes, bikes, etc. Finally, restore means to repair or fix something.

ACTIVITY 1:

Rationale - To develop a recycling program in a community.

1. Hang up 10 large pieces of paper numbered one to ten. On the first is written in large printed letters, "Organize A Steering Committee." Underneath this, there should be two more sentences in a different color, "Who Will Be On The Committee?" And "What Will The Committee Do?" The group should discuss who in their community may be interested in helping organize a recycling committee and who is necessary. For instance a local politician, someone on the board of a bank, from the health department, concerned parents, youth groups, decision-makers of their community, etc. The committee's responsiblities should be discussed. Some of these responsibilities could be for the committee to find out what kind of materials can be recycled and sold, how much of this material is there, how can it be collected, who will help run the program and do the paperwork.

2. The second paper should read, "Conduct A Market Survey." The subtitles should be, "What Is A Market Survey?" This is to find out what materials you can collect to sell, what quantity of that material is available and who would recycle in your community. Some materials to begin thinking about recycling at first, are maybe paper, glass and aluminun cans. (SEE "Recycling At A Glance," AT THE BACK OF THE UNIT). It is important to know how many people live in the area that you wish to include in your

collections. Give an example of a survey that may be relevant to the group, either one that you create yourself or from a magazine or book. Explain to the group that questions on a survey must be specific and important only to this project. For instance what age group would participate in your project, where do they approximately live, if they are female or male, and would they particpate in a specific activity (give a concise description of the activity, eg. Would you collect aluminum cans?). Where (physically) would your group do their survey to get this information and would the time of day effect the responses, eg. women at home or women rushing to get home from work to cook the supper might differ in their responses to the survey due to time pressure. Realistically only 10% of those who answer positively to an activity in a market survey actually do the activity.

You can have the group make up a small survey. The members of the group can practice it on each other. In fact the survey can be one whole group session and the members of the group can practice not only among themselves, but also on others and report back the results at the next meeting.

3. The third paper should read, "Market Availability." Underneath this topic is also written, "Who Will Buy Your Materials?" "What Will They Buy?" "How Much?" And "Will There Be Special Requirements?" eg. separating colored glass when it is collected. Potential buyers must be contacted in order to find out these answers. Further questions for a buyer must be: do the materials need to be bailed, boxed, bagged, cleaned, etc.? Will they pick up the materials or will they demand delivery? What will they pay for the items? Discuss the need to get contracts from a buyer with this type of information in it (if possible) and to keep clear accounts.

4.The fourth topic to discuss is, "How Will The Recycling Operation Run?" What system will be used for collecting recyclables? Will there be a drop-off center (a place where people leave recyclable materials), periodic collections, eg. one day pickups at the curbside or a one day drop-off at a center or a commercial collection, eg. a local company collects the recyclables from the homes or a center)? (SEE "Decide How the Recycling Operation will be Run?" AT THE END OF THE UNIT).

5. "Determine The Operating Hours Of The Recycling Project?" is the fifth paper's topic. The discussion will center around the operating schedule of the project. Will it be daily, weekly and how many hours a day is it available? How will you let citizens know about the hours that it will function and where? People must know the schedule in order to participate so it must be consistent.

6.Another important area for discussion is, "What Type Of Equipment Or Physical Facilities Are Necessary To Run A Recycling Program." Containers are necessary for storing or transporting recyclables so the question becomes what types of containers are needed, how many, where do you get them and how do you pay for them? If these containers are heavy, how do you move them? Do the workers need gloves, hammers, brooms and etc. for working with recyclables? Where can you store these recyclables and how do you keep the place accessible to recyclers, off limits to vandals and clean?

7. "Who Will Staff Your Program?" is number seven. Will you need to pay people to do the work of cleaning up, picking up,

transporting, finding markets to sell the recyclables, etc.? Will volunteers do it? Where will the money come from for workers if needed?

8.The next paper to hang up in front of the group is, "Estimate Your Financial Needs And How You Will Fund Them." Discuss estimating how much money is needed to begin the project, eg. equipment, place to store recyclables, etc. Can members of the group think about ways to obtain this money? It could be through a fundraiser, contributions from businesses or citizens, grants or government monies. Some of the money could come from the recyclables when they are sold to firms. Sometimes a local governmental department will help, eg. the Road Department will offer a truck to move materials or the Sanitation Department will offer a place to store the materials, such as near the incinerator. Companies will sometimes donate containers for storage or transportation. Farmers may help remove compost or also give containers for recyclables. Sometimes it is cheaper if other villages or towns are included. They may also provide money or equipment.

9. This next topic, may not be needed in some countries, "Legal Obligations." Depending on the policies of different governments and the laws, it may or not apply. If it does apply, then the group must discuss about: insurance for worker's or citizens being injured while involved in recycling, permits, zoning regulations, non-profit status (taxes), etc.

10. Finally, one of the most important topics of all is, "Publicizing The Program." It is a never ending task to keep citizens aware of the recycling program in their community and to get them to participate in it. This can be done through the media of T.V., radio, newspapers and etc. Maybe, billboard space can be donated. Programs for children in schools can be useful with information taken home.

If the group is interested in beginning a recycling program in their own town, then the group can be divided and various small groups can pick one of the above areas and find the information in their own community and share this with each other in a large group. More information may be obtained from other groups that may have done similar projects in the same country or a bordering one.

RECYCLING AT A GLANCE

Before You Recycle:
1. Find out what materials your local recycling center accepts.
2. Re-use and repair as much as you can.
3. Recycle as much of what's left as possible.

RE-USE

clothing
canning jars
lumber
paper and plastic bags
plastic containers
wrapping paper

REPAIR

appliances
engine parts
furniture
lawn mowers
snow blowers
tools
vacuum cleaners

RECYCLE

Newspaper
- Stack neatly
- tie in bundles or
- place in paper bags

Glass Jars and Bottles

- clear, amber and green
- rinse
- separate by color
- remove metal rings (labels can stay on)
- store in box or bag

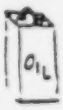
Cardboard

- corrugated cardboard boxes
- egg and cereal cartons
- brown paper bags and postal wrapping paper
- (no waxed or plastic-coated cardboard, please)
- flatten and tie in bundles

And sometimes:

- junk mail, catalogs, magazines and telephone books
- store mail in box or bag
- tie books in small bundles

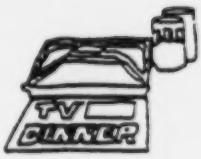
Motor Oil



- drain carefully
- store in sealed container

RECYCLE

Aluminum



- foil, pie plates, TV trays and beverage cans
- rinse and flatten
- store in box or bag

Tin Cans

- rinse
- remove labels and ends
- flatten and store

Scrap Metals

- aluminum lawn furniture, windows and door frames
- brass, steel and cast iron fixtures and machinery parts
- broken appliances
- copper tubing
- old car batteries

Plastics

- soda bottles
- milk bottles
- rinse and remove bottoms from soda bottles
- flatten and store

Office Paper

- computer paper and cards
- collect and store separately from newspapers in box or bag

DECIDE HOW THE RECYCLING OPERATION WILL BE RUN

Each system has advantages and disadvantages. Your group's circumstances, time, money and labor resources will determine your model of operation. Select a system which best meets your group's and community's needs.

SYSTEM	ADVANTAGES	DISADVANTAGES
DROP-OFF CENTERS - are places where people can leave recyclables	-Can be non-staffed	-Vandalism may occur
	-Provides 24 hour access	-Public must travel to center
	-Requires minimal management	-Possible noise, traffic congestion
PERIODIC PROJECTS -are occasional single day efforts	-Minimal starting and operating costs -Less chance of vandalism -Only one day of actual collection needed	-Car required to reach drop-off site -Discourages participation -People must store materials between collections
COMMERCIAL COLLECTIONS -are arranged accounts with local merchants and businesses to collect recyclables	-Encourages a high rate of public participation	-May require: .contracts with businesses .insurance & bonding to make pick-up on company property
	-Provides a stable income	
	-High volume of materials can be collected from local merchants, taverns, banks, restaurants, insurance companies & law firms	-Reliable transportation and labor are necessary
		-Special collection bins require a monetary investment

SYSTEM	ADVANTAGES	DISADVANTAGES
CURBSIDE COLLECTIONS -are regularly scheduled pick-ups	-Easier for homeowners	-Unauthorized collection
	-Reliable schedule provides steady flow of materials	-Usually requires paid staff
		-Unreliable collections discourage participation
ON-CALL COLLECTIONS -provide visible public service to shut-ins, handicapped or elderly and collects from large volume donors	-Same general advantages as curbside collections	-Truck and driver needed
	-Visible public service	-Small amounts of goods collected may strain an operating budget with limited resources
BUY-BACK PROGRAMS -pay cash to the public for materials and resell to a materials user	-Encourages a high rate of public participation	-Requires seed money to pay for starting operation, bookkeeping, and staff
	-Collection service not needed	-Competition with other existing programs may limit chances of success

RECYCLING

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RIVER MONITORING UNIT:

There is a great problem in the Czech and Slovak Republics with clean drinking water. This is true for most nations. The demands for water grows and so does the pollution of the ground and surface waters. The ponds, lakes, brooks and rivers are becoming increasingly polluted. One of the the ways to begin making people aware of this problem is to develop a river monitoring program.

ACTIVITY 1:

Rationale - To understand the scarcity of fresh water in the world.

Begin with hanging up a water fact sheet. The water on the earth is 97.2% salt and only 2.8% fresh. Lakes are .0009%; rivers, atmosphere, .001% and the groundwater is .62%. Only 1% of all water on earth can be used by man for drinking, cooking and bathing. Discuss this with the group.

ACTIVITY 2:

Rationale - To learn about the water cycle.

Have the group members do the water cycle sheet (SEE BACK OF UNIT FOR SHEET). Have them review and understand it. Explain that the dinosaurs were drinking the same water as we are now because water is constantly recycled and there is no "new" water created.

ACTIVITY 3:

Rationale - To become familiar with human activities and water use.

Hang up a water use sheet. It can be made into a circle and divided up into percentages (using the appropriate, approximate sizes) of how much water is used in the home. (Kitchen 10%, Laundry 15%, Sink and Bath 15%, Shower 22% and Toilet 38%). Of course it will be different in various countries but this information may be available from the government. If not, just give home water uses. Discuss this.

Ask each member of the group to tell the whole group where his or her water comes from in the home that is used for cooking, drinking and bathing and where the wastewater goes. Give out the water use picture story sheet (SEE BACK OF UNIT FOR SHEET). Ask which activities are essential to life and which ones are not necessary? (Basically the only one essential to life is the picture of the boy drinking water.)

The other question to ask is what other uses besides in the home, are there for water in their community? The answers can be for factories, irrigation of crops, for animals, hydroelectric power, recreation, restaurants, etc.

ACTIVITY 4:

Rationale - To know the definition a of a watershed.

A watershed is the entire land area that delivers water, dissolved substances and sediment via streams to a major river and eventually to the sea. Another name for this is a drainage basin. Obtain maps for the group. There should be enough for the

group to divide into two's or three's and for each group to have the same map. It should be a topographical map (show land formations, like elevations, water sources, towns, roads and the like). It should be from the area where the group meets so they can share a common interest. Have the groups find where they are located on the map. Find a nearby stream and follow it on the map in both directions to see where it begins or ends. Have them locate the highest areas along both sides of the stream and/or river, if possible. Explain after eveyone finishes that everything from these high areas drains eventually into this stream or river, either on top of the ground as surface run-off (water running off the ground) or from water slowly finding its way underground to the river or stream. If the source or end of the river or stream can not be seen on this particular map, ask the group members if they know where it begins or ends. Before you meet with the group, find this information out from a local person or other maps.

All streams eventually drain into the ocean. Most streams begin in a high area as a stream. All the water drainining from the highest areas into a particular stream, river and its tributaries (no matter how small) are considered its "watershed." Everything within this drainage area effects that particular stream or river. For example, if there are gas stations with underground oil tanks leaking into the soil, this will eventually seep into the river or stream through the underground water supply. A toxic landfill will also do the same with its chemicals leaching into the ground and into the nearby water source. Homes and factories without adequate wastewater facilities will drain their polluted water into the local stream or river. An important and interesting piece of information about watersheds is that if all the rivers of the world drain into all the oceans of the world, and all the oceans of the world are interconnnected, then pollution from the tiniest streams eventually meet and mix in the oceans of the Earth. Thus, each one of us effects the other! We cannot isolate ourselves!

ACTIVITY 5:

Rationale - To investigate the relationship of geology and water sources.

Local geology has an important affect on water supplies. There are books, maps, knowledgeable local people and government officials that can explain about the local geology. What kinds of ancient land formations were present and how did they effect the types of bedrock or soils now existing locally. (SEE SUGGESTIONS BELOW).

SUGGESTIONS:

Below are some questions that can stimulate discussion and are thought provoking, while at the same time adding English words to the group members' vocabularies.

Were there ancient seas, volcanoes, earthquakes, glaciers, etc.? How did these events shape today's land formations in the areas? Were there ancient lake beds that are now fertile fields? Is the ground very mountainous, hilly or rocky because of the debris left by glaciers? Is the soil very sandy because of ancient lake shores or ocean floors? Do the present water source areas exist because of ancient events, like an aquifer? Are there ponds or lakes now existing where there once was a hunk of ice from the

glacier which scoured out holes in the land? How were the present rivers created and is there evidence of the existence of older ones?

There are many more questions that can be asked specific to an area. Have members of the group find out this information from sources in their own community. Also, there may be myths or stories that are part of their culture about how these land formations came into existence. What ancient events created the present land and water conditions in their community? Have the members share this information with each other.

Ask the members of the group if they have gardens or farms? What kind of soil is there in regards to drainage? Does the rain run-off the land or quickly sink into the ground? If it runs off quickly, than it goes almost immediately into the streams and rivers and is lost to the plants.If the rain sinks into the soil quickly, again the water is lost to crops because it moves underground also quickly to the streams and rivers.

ACTIVITY 6:

Rationale - To analyze present day human activity's impact on a river.

The effect of human activity has left its mark on most present day rivers. First, pick a local river or stream on a map. See what currently exists in its watershed, eg. factories, farms, landfills, roads and etc. How does this presently affect the river? eg. chemicals, oil spills, water draw-downs, fertilizers and wastes adding nitrogen, salt from the roads, etc. Are there cities or towns along the river? Do they have water treatment plants? Are they using the river for drinking water? Is the river canalized in any section and why? Are there dams? It so, why and where? If the water seems to freeze less than previous years, discuss if it is due to pollution and global warming?

ACTIVITY 7:

Rationale - To investigate the historical background of the river.

The history of rivers can not be overlooked. You can not separate the river's past uses from the current condition of the river. For example, it may have run free in the past but was later canalized or dammed for a factory's use. Members of the group can interview older people with tape recorders or paper and pen about how their local river was in the past. Some of the questions can be: was there fishing; was there iceskating; did the river run free; could you swim; did the water seem cleaner or dirtier; were there small dams, mills or factories affecting the river, was the river used for transportation; and lastly, was it used as an energy source? The members can report back to the group the information that they received from their interviews. If some of the group members have the same stream or river, they can compare notes to see if the information is similar or if there are large discrepancies in the memories of the older folks that they interviewed. If this happens then maybe the group members can seek out other older people who can also tell about their memories of the river and the group members can compare this with their previous reports. Remember different people had different experiences with the river when they were young so they may remember events differently. This can be an interesting topic for

discussion because the question arises: Who writes the history books and how accurate are they? Is history only a few peoples' experiences and who were these people (farmers, teachers, politicians, etc.)? How did their occupations affect their attitudes toward the environment that they remembered from the past? Discuss this.

In small groups have the members create a skit or dialogue about the river using characters from the past. It can be fantasy. This can be presented to the larger group using notes but not reading it all.

Maybe there are old photos, old magazine or old newspaper articles to bring to the group. The members can read , show and discuss them.

Check if there are any old songs about the local river or other rivers that members of the group know. If so, have group members bring in their instruments and/or words and sing. The leader can bring in some English language songs about rivers, teach them to the group and explain new words.

ACTIVITY 8:

Rationale - To obtain information about animals living in the river.

Many people are interested in knowing about the wildlife that lives in the river. Are there insects, fish, reptiles, amphibians, birds and mammals living in the river? Have the group research an animal that lives in this river from one of these categories and report back to the group. How does pollution effect this particular animal? Go to the river as a group and look for some of these creatures.

ACTIVITY 9:

Rationale - To start a monitoring program.

A. You can start a monitoring program with your group after you have studied the river (like in ACTIVITY 1). Look closely at a local map or speak to local people about where problem sites exist along the river (or possible ones) and ask if members of the group would like to singly or in pairs monitor one of these sites. (SEE SUGGESTIONS BELOW.)

SUGGESTIONS:

Possible problem areas for monitoring sites might be a factory (discharging pollutants into the river or drawing-down too much water), a housing project or development (wastewater pollution), a farm (nitrogen and phosphate from fertilizers, chemicals from pesticides and nitrogen from animals), landfill (chemicals leaching into the groundwater and then, into the river), roads (salt from salting the road because of ice or oil spills), gas station (oil spills), a water treatment plant (overflow of untreated sewerage due to heavy rains or too low treatment capacity), mining (sludge), dams (cause the river to be too low, which concentrates the pollution), etc.

B. Go with the group to the river and look at the physical surroundings, such as the banks of the river. Ask them questions. Is there junk along the banks? Are the banks steep, eroded, flat,

a gentle hill, etc.? Do the banks have vegetation growing on them? What kind? Do the banks seem sandy, clay-like, asphalted, etc.? Other questions referring to the banks of the river, are there farm animals nearby, buildings, etc.?

Are there drains coming from the banks into the river? These drains are examples of point source pollution (a single, identifiable source that discharges pollutants into the environment). These are easy to spot. On the other hand, does water come off a road after a rainstorm or from a farm? These are examples of nonpoint pollution (large land areas that discharge pollutants). These sources of pollutants are harder to identify and are less easily controlled because they are so generalized.

C. Is the water flowing quickly or slowly? To measure the speed of the river, measure a distance in the length of the river (use a short distance). Then, drop in a stick or something that floats, at the first point and let this object float downstream. Time the object from the starting point to the finish. Divide the distance by time and you will get the rate.

D. Is the river deep? Does the sun shine on it? What season is it? What is the color of the water? These factors effect the amount of DO (dissolved oxygen) in the water. DO is a very good indicator of the health of the river because the amount of DO in the water signals the presence of organic wastes. Since oxygen is vital to the life of aquatic plants and animals, it is important to know if the level of DO is critically dropping to a point that life can no longer exist. The colder the water, the more sunshine, the lighter the water, the less deep and the faster the water flows, the higher the DO will be. Testing for DO is a more complex test and unless you are a chemist, it is best not to try it. However, if the group decides to monitor the river and buy equipment, an inexpensive DO kit is one of the most worthwhile tests for indicating the river's state of health. There are simple, fairly inexpensive test kits that can be ordered through catalogs, such as; The Sargent-Welch Scientific Catalog, P.O. Box 1026, Skokie, Illinois 60076-1026, U.S.A. or the Ward's Biology Catalog, Ward's Natural Science Establishment, Inc., P.O. Box 92912, New York 1469-9012, U.S.A.

If you are testing for DO and the level drops, test it again. A drop in the DO can indicate pollution. However, DO levels will also drop in the heat of the summer or if the water level is very low. Try and walk along the river to see or smell where the site of contamination exists. Do not do this test in the winter because it is dangerous due to ice forming on the river and also inaccurate because DO rises when the temperature of the water drops. It is important to record during each test, the temprature of the water and air. This helps to interpret DO changes.

E. The monitors can also measure the turbidity of the water (color from particles in the water) by making a white disc with four equal segments colored black and white alternately (secchi disc - pronounced sek-kee) attached to a string. Mark the rope with scaled measurements and slowly let the disc drop into the water. Watch it from above the water. When you no longer can see the disk, keep your fingers on the string where it enters the surface of the water. Keeping your fingers on the spot pull the disc out of the water and measure the length of the string that was submerged into the water. Do this on a regular basis to check for changes of turbidity. There are many reasons for the change in the amount of particles in the water, but it could indicate

pollution.

F. You may want to measure the pH of the river water with pH strips Just dip in a piece of pH tape and compare the color of the wet strip to the color chart on the box that it comes in, and you will get some idea of the ph of the river. Normal pH of fresh water can differ from 5 - 8.5. Animals begin to die if the pH goes below 5 because it is too acidic for them to survive. This condition is usually caused by acid precipitation and this in turn, is created by pollutants in the atmosphere, like nitrogen, sulfur and carbon oxides, and particulates. Salt water is about a pH of 8.

G. Look at the bottom of the river. Ask the group if there is vegetation growing there? What kind and how much? Is it sandy, gravelly, muddy, rocky, etc.? These factors effect the color, turbidity, acidity, DO, etc. of the river. Do they see insects, fish, etc.? These are often indicators of whether the water is polluted and how polluted. Certain insects and fish only survive in very clean water and others are not so particular. There are some very simple picture books to identify some of these insects and tell you which need what environments. Some of the group members or teachers in the community may know this information.

H. Odor is another indicator of the health of the river. If the river smells oily, fishy, acidic, like rotten eggs (sulfur) or different from its usual odor, try to locate the source of the odor. It can mean pollution. Look to see if the color of the water has changed or if there are any new substances in it or more of the old substances. Some examples are oil on the water, foam, floating objects, etc.

I. A monitor may want to find a spot on the bank of the river (a tree, a large rock, etc.) and to measure the distance from this spot to the edge of the water. This indicates the level of the water. Is it much lower or higher than normal? These are questions to think about. If the level is much lower than normal, the monitor must try to find out the source of the problem. Is there a dam lowering the water level upstream? Is there an industry that is using too much water at one time or a farmer using too much water for irrigating, etc.? The lowering of the river to dangerous levels can cause aquatic life to die. If the river is flooding, this is usually a healthy situation for the river because much of the debris and pollution is washed away. At the same time it can be a catastrophe for people living too close to the river, but it is not the river's fault. It is the people's. There should be local laws regulating development along the river. Nothing should be allowed to be built too close to the river. There should be a corridor along its banks. It would be ideal to have walking or biking trails along the corridor, both for the river's protection from pollution from nearby man-made activities and for recreation. Discuss with the group.

J. The river monitors will become familiar with their section of the river and notice when there is something different about it. Perhaps a fish kill, or many aquatic plants dying or too many growing in their area. Maybe there is a new pipe protuding into the river. These are all signals to explore the situation further, and to try and discover the origins of these problems.

K. It is important for monitors to keep a consistent record of their information. They should write the date, the temperature of the water and air. Weather conditions should be described. For

instance, were there heavy rains recently (a few days ago or a few hours ago). Was it very hot? Then, they should record any odors, colors and so forth (discussed above). If there are any tests that they have performed, the results should be recorded. One person should be responsible for keeping everyone's data in one place and to learn how to plot it on graph paper. In this way everyone's results can be compared along the river and a picture begins to emerge. This should be done over an extended period of time. The more years that data is gathered, the more meaningful it becomes. It is good to try to get alternative monitors in order to relieve the other monitors because people need breaks from the weekly responsibility of monitoring. They get tired and need a rest from it.

L. It is important to have all the monitors meet regularly so that they can share problems and ideas about the river as a whole and do not feel so isolated but part of a team. It is also important to compare data regarding river changes with everyone so that the monitors can see the broader perspective of what is happening on the river.

M. It is also most important to have an action plan if there is a problem on the river. First the monitor should try and find the source of the problem. Then, with the leading monitor, they should explore the problem further. The proper authorities should be notified. A photograph of the situation, if possible, is an excellent way to document events. Put the date, the place and time of the photo directly on it. Document which authority you spoke to (the name, their department), when (time and date) and about what. Also, write down the discussion (who said what). Try different authorities, if you are not getting help.If possible go with the authority to the source of the problem. Discuss alternatives about the problem with the authority. Together with the authority, discuss the problem with the individuals or company involved. Be sure to get a date from the authority, when and how they will get in touch with you again so that you can find out the solution (the end results) of the situation. If you do not get any help or the authority does not contact you again, meet with the other monitors and plan a course of action. Keep all the monitors, if possible informed of the situation from the beginning. Contact the authorities again to ask them what they are doing about the situation and when will you know the results. Finally, if there is no action, tell them that you will have to go to the newspapers or media with the story. If necessary, phone or write the newspaper. Again, keep a record of the time, date and to whom you spoke.

N. If you want to practice MONITORING INDOORS, create a river out of paper. Put it on the floor and cut out of paper a factory, dam, farm, benzine (gas) station, waste treatment plant, large housing development, landfill (dump for waste) and so forth. Put these cutouts along the river and have the group divide into pairs or small groups. Have each group take a "monitoring site" (at one of the cutouts) and discuss with one another the possible problems, how they affect the river, who or what might be the source of the problems, which authorities to contact and possible solutions. The groups can present their findings to the other members. Allow everyone to speak.

ACTIVITY 10:

Rationale - To familiarize the public with the river by a boat trip organized with the other monitors and/or interested

organization (s).

Plan a canoe or boat trip down the river for the public. Notify the authorities about it and invite them to join the group. Publicize the time, place and route. Have articles in the newspaper or media about the river, such as its history, health condition and so forth. Don't forget to plan for safety factors to protect the public. The community will get to know their river by this activity and perhaps try to protect it.

ACTIVITY 11:

Rationale - To stimulate public interest in their local river.

Plan a river festival,somewhere along its banks. Especially design it for children. Plan it well and in advance. Publicize it and invite the authorities. Have visual information about the river available for the public. Have simple games for children, music, refreshments, a local authority speak briefly about the river, boat rides (safety may be a problem) and food (with waste and recycling containers nearby).

ACTIVITY 12:

Rationale - To promote a public participation in cleaning up the river.

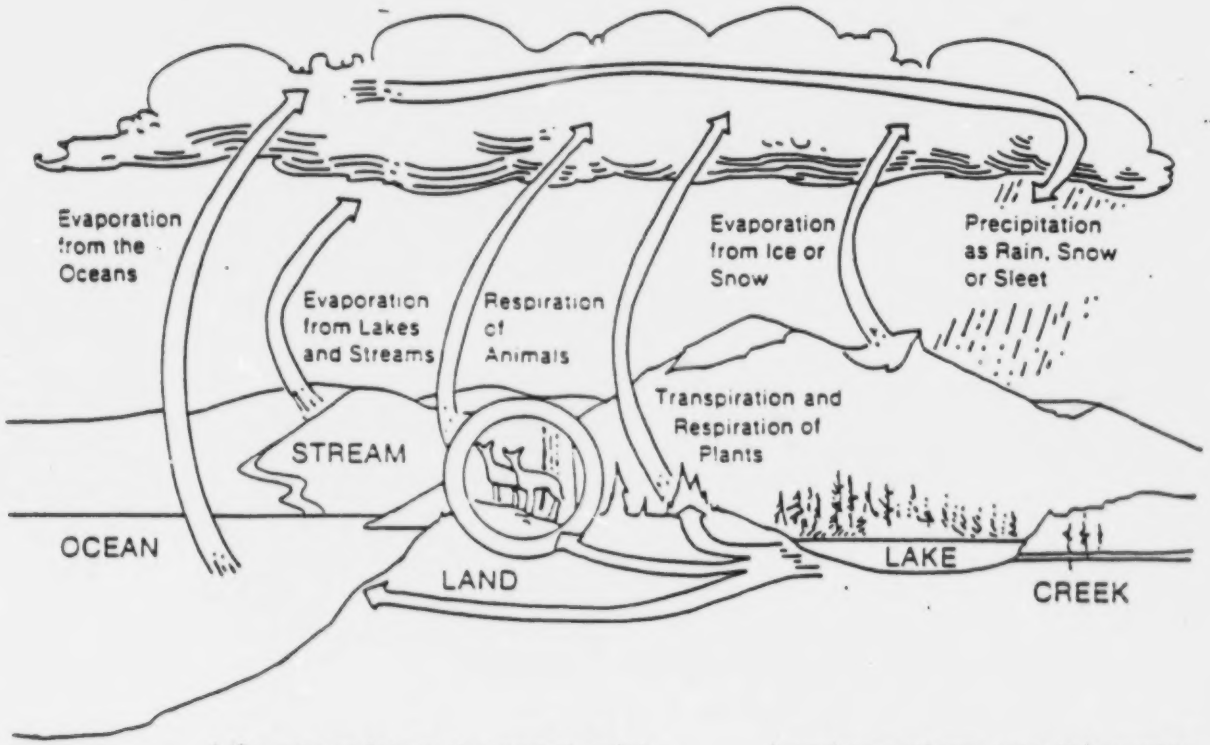
Organize a river cleanup with your group. Look at maps and discuss after visually viewing the area, which parts of the river need cleaning up. Look for litter along the banks and in the river (Safety may be a problem, so be careful). Contact organizations that may want to be involved, like the Boy Scouts, other youth groups, church groups, environmental groups, senior citizens and so forth. Notify the authorities about the plans and ask for their help. Maybe a local town or personal truck can be used for picking up the rubbish. If there is a health, road or garbage department, they may help in some way. If they do, try and get their names and pictures in the paper or at least thank them with a note or publicly in the paper. Do the same thing for the volunteers who help with the pickup. If possible ask the local shops to donate gloves (or ask the citizens to bring their own gloves for protection) and bags for the waste. Make sure that you coordinate the cleanup with the city authorities. Publicity and safety are the other important factors for a successful river cleanup.

ACTIVITY 13:

Rationale - To connect river water monitors internationally.

There is an international river network that your group can contact. It is called the Global Rivers Environmental Education Network (GREEN). This organization has a newsletter, shares computer data, has exchange programs and international workshops about the health of the world's rivers. The address is: The Green Project, School of Natural Resources, University of Michigan, 430 E. University, Ann Arbor, Michigan 48109-115. U.S.A.

THE WATER CYCLE



Life, as we know it, cannot exist without water. There is water in the air, soil, the rocks of the Earth's crust, in all living things. There is, of course, water in the oceans, lakes, ponds, rivers, and streams.

From the land, water begins a downhill journey through the creeks, lakes, underground channels (ground water), and rivers, eventually reaching the oceans. Some of this water will evaporate into the atmosphere.

Water will then return to the Earth as precipitation in the forms of rain, snow, or sleet. It may fall directly into the oceans, or it may fall onto the land. Then it begins the cycle again.

Land organisms use this water at various points in the cycle. Plants absorb water from the soil and use it to perform chemical activities such as photosynthesis. The plants will then lose the water through evaporation from their leaves (transpiration). Animals get water from drinking and by eating foods that contain water. Animals lose water through breathing (respiration), evaporation from their skin (transpiration), and passing off waste. In all organisms, some water is released only through the decomposition of the organism. Eventually, all water taken in by organisms returns to the nonliving world.

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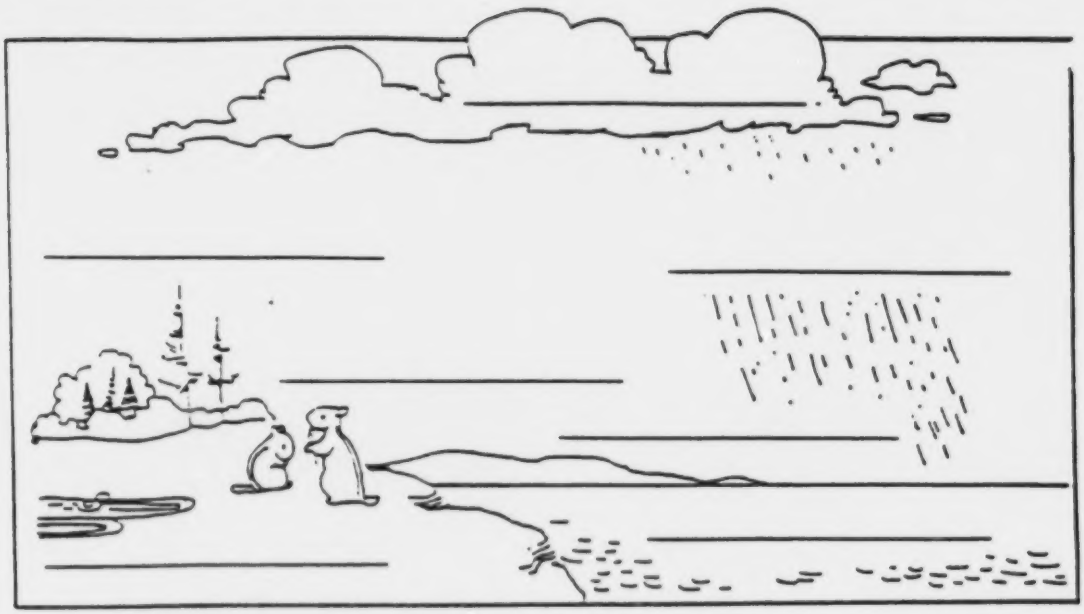
WATER CYCLE 7



ACTIVITY 1. Label the diagram using these terms:

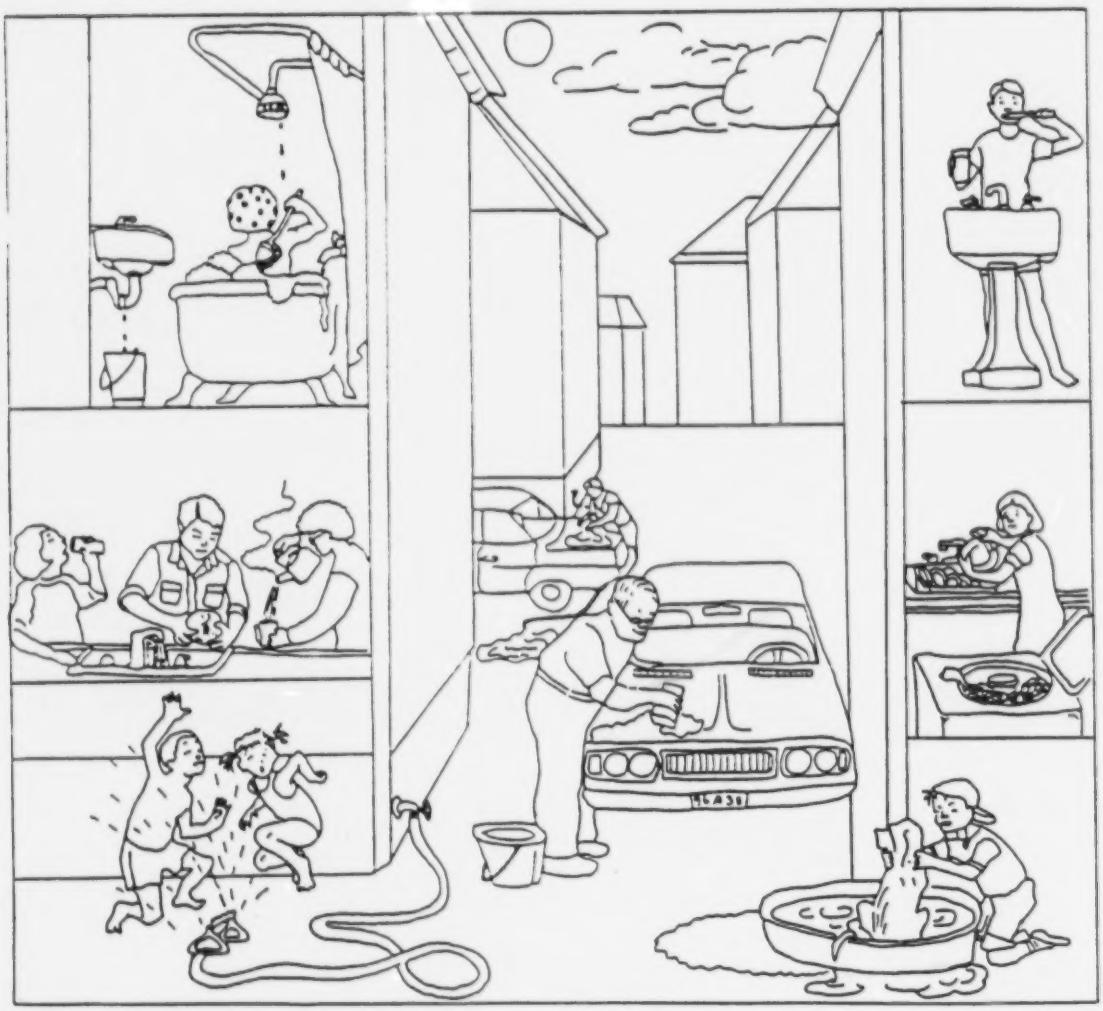
a. precipitation
b. transpiration
c. ground water
d. respiration
e. snow, sleet, rain
f. evaporation
g. creeks, rivers, oceans

MASTER # 4

Name _____

Date _____

WATER USE PICTURE STORY



Here are some typical household activities in which water is used. Some people in the household are efficient water users. Some waste water.

1. Mark the efficient water users with a plus sign (+) and the water wasters with a minus sign.

2. Rank the activities in the picture A, B, or C. A = survival level, activities that are essential to life. B = primary level, activities that are necessary for good health. C = secondary level, activities that are useful, but less essential.

3. What changes in water use would save water without affecting the user's survival? Health? General domestic activity?

Master #5

Name _____

Date _____

FAMILY WATER CONSERVATION CHECKLIST

TOILET: People use more water flushing the toilet than any other way.

- Don't use the toilet as a wastebasket.
- Save water on each flush by displacing the water in the tank with a quart-size plastic bottle filled with water.
- Use a toilet tank dam to hold back some water on each flush.
- Check for leaks and repair any that you find.
- Flush only when there is solid waste in the toilet bowl.

BATH AND SHOWER: Water and energy can be wasted, since energy is used to heat the water.

- Turn off the shower while soaping up. There are on-off switches (available from plumbing supply stores) to help you do this.
- Take showers instead of baths.
- Take shorter showers.
- Install a water-saving showerhead.
- Fill the tub only part way when bathing.
- Recycle bath water by using it on house plants.

SINK: Don't let water run down the drain while you do the following:

- Brush your teeth.
- Shave.
- Wash and rinse dishes.
- Wait for water to get cold to have a drink. Instead, keep a container of drinking water in the refrigerator.
- Wash fruits or vegetables.

APPLIANCES:

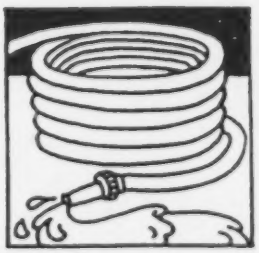
- Wash only full loads of dishes or clothes, or use the low-volume setting if your machine has one.

GENERAL HOUSEHOLD:

- Do a home leak-check on all faucets and water lines to appliances. Repair any leaks that you find.

OUTDOORS:

- Water the garden and lawn at dusk, when the day is cool. This is better for plants, too.
- Mulch the garden to retain moisture in the soil.
- Wash the car with a bucket of suds. Use a hose only when rinsing, and always use a nozzle on the hose.
- Use "trickle" irrigation instead of sprinkling.
- Sweep walks and driveways, instead of hosing them.
- Do not water the concrete -- it doesn't grow.



RIVER MONITORING

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ENVIRONMENTAL HEALTH UNIT

"For the first time in the history of the world EVERY human being is now subjected to dangerous chemicals from the moment of conception until death," wrote Rachel Carson, an American environmentalist from the 1950's.

What is the environment? It is all the external conditions that effects an organism during its lifetime.Most personal health hazards come from exposure to various factors in our environment. A hazard is something or an action that can cause injury, disease, economic loss or environmental damage. There are four types of hazards: physical, such as floods, drought, tornados and noise; chemical, such as harmful chemicals in the water, air, soil and food; biological, such as viruses, bacteria and the like; and finally, cultural, such as working and living conditions, smoking, diet, alcohol and other drugs, and unsafe sex. The cultural hazards are referred to as lifestyles or the way a person usually chooses to live.

In the Czech Republic people can voluntarily choose different lifestyles. The way that people choose to personally live is more harmful to their health than all the other environmental problems combined. According to the World Health Organization, environmental and lifestyle factors play a key role in causing or promoting 98% to 90% of cancers. Major sources of carcinogens are cigarette smoke (40%), dietary factors (25%), occupational exposures (10% to 15%) and environmental pollutants (5% to 10%). In the areas of diet, smoking, alcohol and other drugs, exercise and stress, it is possible for people to take responsibility for themselves.

Therefore, the area that this unit deals with will be the cultural hazards or people's lifestyles.

ACTIVITY 1:

Rationale - To focus on lifestyle issues and their affect on a person.

1. Divide the group into smaller groups of two or three people. Give each group a different topic: Diet, smoking, alcohol (other drugs, if appropriate), exercise and stress. Give them time to take notes and present information orally to the whole group about:
    1. How do these areas effect your personal environment?
    2. What problems does this create for the individual?
    3. Solutions - What can the individual do about it?

Write down new vocabulary words on the board, when the groups are presenting and encourage discussions. At the end of the presentations, have each student write down one thing that s/he will do to change their environment. This can be private or shared with the others.

ACTIVITY 2:

Rationale - To analyze eating habits and health.

1. This activity deals with people's diets. Have group members individually write down for a week or few days, everything that they eat or drink for their meals and snacks.

2. When the group meets again, draw a four level pyramid with food categories.
A) Write in the large base area, the words bread, cereal, rice and pasta. These are the most important to eat in larger proportions than other food categories. Explain that whole grains are more nutritious than processed white grains.
B) The next level up on the pyramid should be vegetables and fruits. Explain that it is important to include citrus fruits and cabbage, broccoli and brussel sprouts. These foods are high in Vitamins A and C. They have been found to inhibit chemically induced cancers. Of course, if these are not available in your country, suggest alternatives.
C) The third level up should be divided vertically in half and should include on the left side, milk, yogurt and cheese products. On the other half (right side) of this level, include meat, poultry, fish, dry beans (lentils), eggs and nuts. These are high protein foods and everyone needs protein but in small amounts. The problem is that these are high in fat content and milk products are often highly contaminated by concentrated chemicals from the animal due to its diet. Explain that high fat foods cause cancers (colon and breast) and coronary problems. Probably lentils, which are cheaper and nuts are the most healthful.
D) On the top level of the pyramid are the foods to be avoided, like fats, oils and sweets.

Basically, bread and pasta are great.

Fruits and vegetables are good.

Meats, dairy and nuts are alright.

Fats and sweets are trouble.

Discuss this pyramid with the group and make sure that they understand it.

Suggest that the group limit their salt intake because it causes high blood pressure. Canned, salt-cured and pickled foods and packaged (quick-type) foods have high salt content. Do not add salt to your cooking or the food served on the table. Not more than 6 grams a day of sodium is recommended.

Alcoholic beverages should only be consumed in moderation. The combination of smoking and alcohol should be avoided. This reduces the chance of cancers of the gastrointestinal and respiratory tracts.

Lastly, discuss with them the need to avoid eating foods with additives, such as coloring and preservatives. These are cancer causing.

If they can grow or buy organically grown foods it will be healthier. Also it is a good idea to support the local farmers and to encourage them to grow foods and treat their animals in a more healthy manner.

3. Follow the above discussion by writing down on the board different individual's intake from the record that s/he kept for the past few days or week. Then, ask each person if there is anything to add to the list that isn't already on the board. When all the foods and drinks are on the board, go over each food and drink with the group and discuss if it is considered a healthy

food or not. Use the above (DIET ACTIVITIES 2) discussion as a basis for the answers.

4. Divide the group into pairs. Have them discuss with each other their individual diets from the records that they kept for the week or a few days. Have them suggest to each other which foods are unhealthy and maybe acceptable alternatives.

5. Discuss the problems of eating meat. It is often contaminated from chemicals that the animal eats. Also, many meats contain antibiotics or hormones that were given to the animal. The system of raising and killing animals for meat are often very cruel. In most cases, cattle are kept in pens, forced fed, and are not allowed to lie down and rest. They often become deformed or diseased. It takes 16 kilograms of grain to feed cattle in order to produce one kilogram of beef. The average person can adequately live on one kilogram of grain a day. If the grains were used to feed people instead of cattle there would be much less starvation in the world.

ACTIVITY 3:

Rationale - To encourage smokers to stop smoking.

1. Write to the American Cancer Society for their free brochures called, "How To Quit Cigarettes." (SEE END OF UNIT FOR SMOKING TEST AND SUGGESTIONS). There is a personal test inside for each member of the group to take and discuss. They can share this booklet with family and friends.

2. Discuss with the group about creating no smoking areas in their community, eg. public places like restaurants, public transportation, markets and etc. Suggest trying to pass a law to have warnings on cigarettes about their danger. Discuss not allowing ads on billboards, T.V., newspapers or radio for cigarettes. Talk about not allowing cigarette machines to be placed in public places where young people frequent. Encourage ads that show people with yellow teeth, bad breath and all the other negatives produced by cigarette smoking that young people do not like. Brainstorm about other ideas to help stop smoking.

ACTIVITY 4:

Rationale - To recognize alcoholism as a problem.

1. Discuss with your group if they think that there is an alcohol problem or other drug problem in their community and if so, what can be or is done about it. Are there resources for people who need help? Is there funding and will there be funding if resources are needed? Check with the country, district or local health department, clinics or hospitals about these problems and what information they may have. Contact AAA (Alcoholic Anonymous) in your community, country or the U.S.A. for materials to read and discuss about alcoholism. Also, AA may provide information about starting a self-help group for alcoholics that may want to recover or be recovered. Discuss with the group members what a self-help group is because this is a new concept for most people.

ACTIVITY 5:

Rationale - To cope with stress.

1. Bring to the meeting a list of suggested areas that may create stress for members of the group. If there is a holiday or large event in the community, the stress factors can relate to this event, such as: neighbors, pets, shortage of money, finding time for yourself, tiredness, parents, children and lack of privacy Have the group members divide into two's. Each pair can choose one topic that interests them from the list (it can be done by a lottery system,so that a pair may choose first or second or etc.) and no pairs can have the same topic. Give the pairs about ten minutes to create a short dialogue between them about the situation. They can fantasize about the situation but they must include a solution. The pairs can take notes and then present their dialogue to the whole group. The group can ask questions to the pair but only to the characters that they represent and the pair can only answer "in character" (not as themselves, unless they choose to do it that way).

2. A meditation can be done. Give out the diagram of the body with its parts. SEE BACK OF UNIT. Have them fill in the various body parts and go over it with them. Divide the group into pairs and have them take turns asking each other the body parts, and the other one points to where it is located on him or herself. Ask the group if they are familiar with the technique of meditation for stress reduction. Meditation teaches an individual to "tune in" to their body's needs so that under conditions of stress, the person can use meditation techniques to relax themselves. Go over the necessary words for meditating (SEE IN BACK OF UNIT ON THE SHEET FOR THE BODY). Have them sit as comfortably as possible or lie down. They can open their belts, take off their shoes, etc. Tell them in a soothing voice not to worry about their English but just to relax, listen and follow the directions for only the parts that they understand. Have them place their hand on their diaphragm (explain and demonstrate where this is). Have them take a deep breath in and feel their diaphragm get bigger like a balloon. Exhale (breathe out) and feel their diaphragm get smaller. Have them breathe in and out very slowly. Tell them to close their eyes, if they want and to keep breathing and feeling their body begin to relax. Instruct them to feel their toes, curl them tightly and then, to relax them. Feel their feet, arch them, bend the top of their foot to their leg and relax. Feel their calves, tighten them and relax. The same applies to their thighs, buttocks, stomach muscles, lower back, upperback and chest. Instruct them to tighten and relax each one at a time. Instruct them to breathe in gently and exhale gently and feel how light they are. Have them make a fist on both hands and rotate their wrists. Relax their hands. Bend their lower arms to their upper arms and make a muscle and relax. Raise their shoulders toward their ears and then toward their toes. Relax them. Turn their head a little to the left and then to the right. Put their chin (very gently) on their chest and gently rotate it. Then, relax their neck. Open their mouth and stretch their tongue, cheeks and nose, Relax them. Close their eyes and look up, down, and to the sides. With their eyes still closed, relax the area around them. Wrinkle their forehead and relax it. Relax the areas around their hairline, temples and ears. Imagine all the stress or tension going up through their head and out the tips of their hair. Tell them to say, "Goodbye," to that tension. Have them take a deep breath slowly in and out and feel how light they are. Pay attention to their breathing. Breathe slowly in through their nose and out through their mouth. Feel their diaphragm. Feel the air leaving their body. Observe their breath and the spaces between them. Tell them that the leader will stop talking for a moment and to just feel their own

breath coming and going and their bodies relaxing. After a moment, tell them to become aware of sensations in their body, such as hot, cold, discomfort, etc. Suggest to them as they breathe to notice what they feel around them, such as: where is the chair, the floor, their clothes, etc. As they breathe tell them to expand their awareness to sounds around them and in their own body. Tell them that they have no control over the sounds so accept them and let them just be there. As they relax, they should become aware of their thoughts. Many different things may come into their minds. That is fine. There are no right or wrong thoughts. They are just thoughts - your thoughts. Try not to focus on your thoughts but just be aware that these thoughts are passing through. Tell tham that for the remaining part of the time just be aware of whatever comes into your consciousness. Whatever it is, just be aware and accept it. When the leader is ready to end, tell them that they have spent this time intentionally nourishing themselves and getting to know themselves deeply. When you finish, instruct them to try and allow the awareness of their body and mind to go with them throughout the day. Tell them that when they are ready, to take in some nice deep breaths and energize him or herself. Tell them to stretch if they want and open their eyes

ACTIVITY 6:

Rationale - To learn exercises to strengthen your back.

1. These are four exercises that take about 10 minutes a day to do and strengthen the lower back where most people hold a great deal of tension. Give out the written instructions. Demonstrate the exercises. The group can then practice while you repeat the directions and demonstrate the exercises with them. Make sure noone has any medical problems that prevents them from participating.

A) Lie down on your back. Bend your knees. Flatten the small of your back to the floor. Squeeze you bottom tightly for five seconds. and then, relax. Repeat five times.

B) Flatten your back against the floor. Squeeze your bottom tightly. Hold one of your knees in your hands and gently pull your knee toward your chest. Point your toes toward your head. Stretch your other leg flat on the ground - toes toward your head. Hold this position for five seconds. Go back to the original position. Switch legs. Do this five times.

C) Same as B, but raise your head to meet one of your knees. Do this gently. Keep your other knee bent!! Do this for five seconds, then switch legs. Do this five times.

D) Same as A, only flatten one leg on the floor, then raise it perpendicular to your body. Point your toe to your head. Do this about five seconds, then switch legs. Do this five times.

For each exercise, always flatten your back to the floor and squeeze your bottom. Do everything slowly, carefully and gently. Also, except for B, always keep the unused leg bent.

2. Discuss how to schedule exercise into their daily life. It is recommended that people exercise minimally for 20 minutes, three times a week. Perhaps some people could walk or bike to work, walk up and down stairs instead of taking the elevator or escalator or walk their dog briskly in the morning or evening. Some people may consider joining an exercise class, jogging, etc. Stress that it is important to consider their health and age before starting to do most of these activities, because it could cause stress to their bodies. If there is a question, proceed

gently and slowly and "listen to your body." If it feels fine, then continue, but if there is any pain stop immediately. For some, weight loss might be helpful for their health.

ACTIVITY 7:

Rationale - To identify environmental hazards in the home and work.

1. Ask group members to get into pairs. Ask them to list physical environmental hazards in their homes and at their workplace. Write on the board the first pair's list. Add any new hazards from other pairs on the board.

SUGGESTIONS:

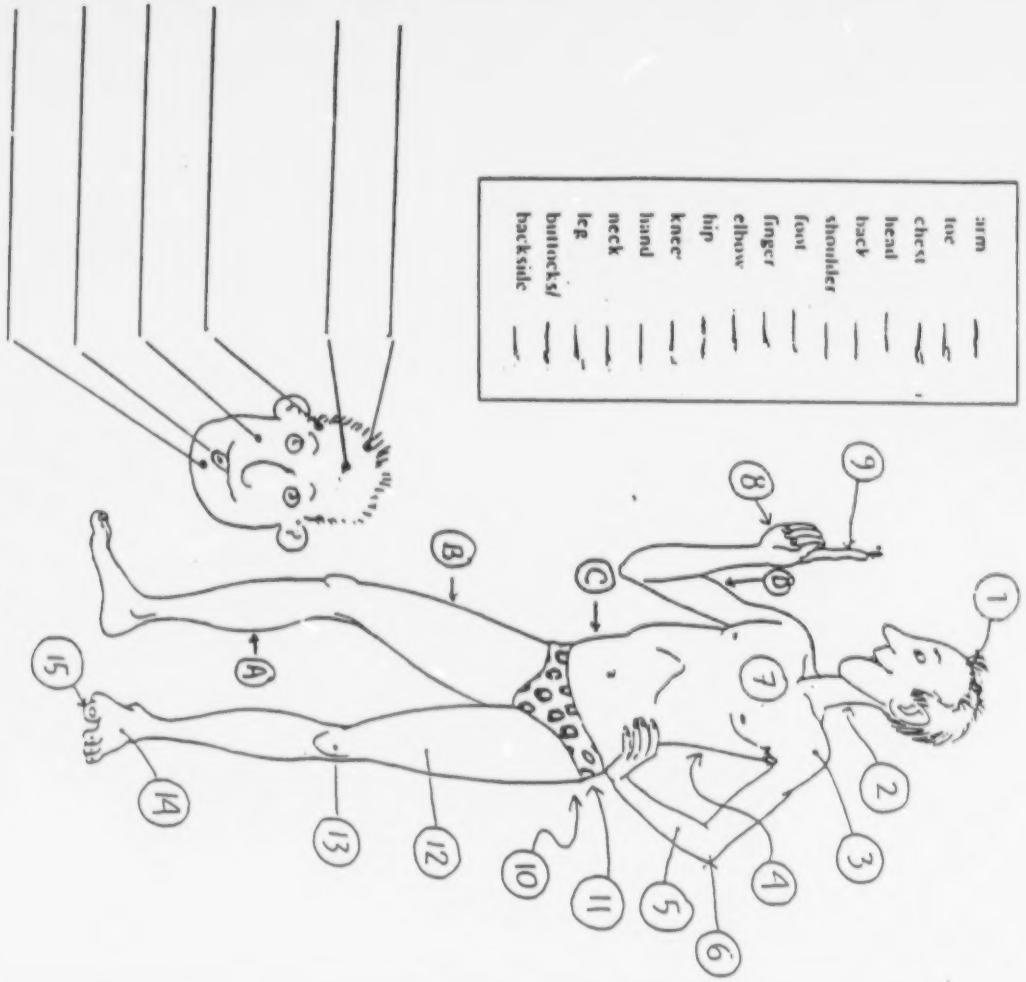
Home: Noise (T.V., radio, stereo, neighbors' pets), paints, cleaning fluids, gardening pesticides,lead pipes, asbestos, microwave ovens, lack of humidity in the house during the winter heating season, carbon monoxide from an attached garage, wood or coal air particles from heating, radon, etc.

Work: Copy machines (toner, etc.), computers (carpal syndrome, radioactivity), poor seating or lighting, toxic fumes from new carpeting, poor ventilation or heating, vermin in the building, poor food in the cafeteria, hazards due to maintenance of the building, lack of washing or bathroom facilities, fire hazards, etc.

Discuss the list of problems and what can be done to eliminate or minimize the problems. Ask if ther are laws in the workplace to protect the worker. Discuss this idea and encourage the group to investigate this further (SEE END OF UNIT FOR FURTHER SUGGESTIONS).

6 The body

Write the number 1-15 next to the correct words (see example)



calf, calves
thigh
stomach, belly
lower back
upper back
fist
lower arm
upper arm
chin
mouth
tongue
cheek
nose
forehead, brow
ears
hair line

temple
hair
body
diaphragm

curl your toes
arch your foot
tighten
stretch
make a fist
bend your arm
make a muscle
raise your shoulders
turn your head
rotate your chin
wrinkle your forehead

comfortable
relax
breathe in, out
inhale, exhale

tension
observe
flow (of the breath)
sensations
spaces
expand your awareness
sounds
thoughts
consciousness

WHY DO YOU SMOKE?

Here is a list of things people say about why they smoke. Next to each one, write the number that applies to you:

5—often; 3—sometimes; 1—doesn't apply

Then see page opposite for scoring.

A. I smoke in order to keep from slowing down. _____

B. Handling a cigarette is part of the enjoyment of smoking it. _____

C. Smoking cigarettes is pleasant and relaxing. _____

D. I light up when I feel angry about something. _____

E. If I run out of cigarettes, I can't stand it until I get more. _____

F. I smoke without being aware that I'm smoking. _____

G. I smoke to perk myself up. _____

H. Part of the pleasure of smoking is lighting up. _____

I. I get great pleasure out of smoking. _____

J. When I'm upset, I like to have a smoke. _____

K. I'm very aware of when I'm *not* smoking. _____

L. I light a cigarette without noticing I have one burning in the ashtray. _____

M. I smoke to give myself a lift. _____

N. I like watching the smoke when I exhale. _____

O. I want a cigarette the most when I feel relaxed. _____

P. If I feel worried or upset it helps to smoke. _____

Q. I get a gnawing hunger for a cigarette if I haven't smoked for a while. _____

R. I find a cigarette in my mouth I don't even remember putting there. _____

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HOW TO FIND OUT WHEN AND WHY YOU SMOKE

A lot of smokers find that this is a good way to prepare to quit. Check off the time of day you smoke and rate how much you enjoyed the cigarette (from one to six; six means you enjoyed it a lot).

Make a note of your feelings or the situation.

TIME	NEED (1-6)	FEELINGS/ SITUATION	TIME	NEED (1-6)	FEELINGS/ SITUATION
6 (a.m.)	___	_____	4 (p.m.)	___	_____
7	___	_____	5	___	_____
8	___	_____	6	___	_____
9	___	_____	7	___	_____
10	___	_____	8	___	_____
11	___	_____	9	___	_____
12	___	_____	10	___	_____
1 (p.m.)	___	_____	11	___	_____
2	___	_____	12	___	_____
3	___	_____	1 (a.m.)	___	_____

Do this for several days and see what kind of pattern you come up with. Then, cut out the cigarettes you rated lowest. Cut out the next highest, and finally those you enjoy the most.

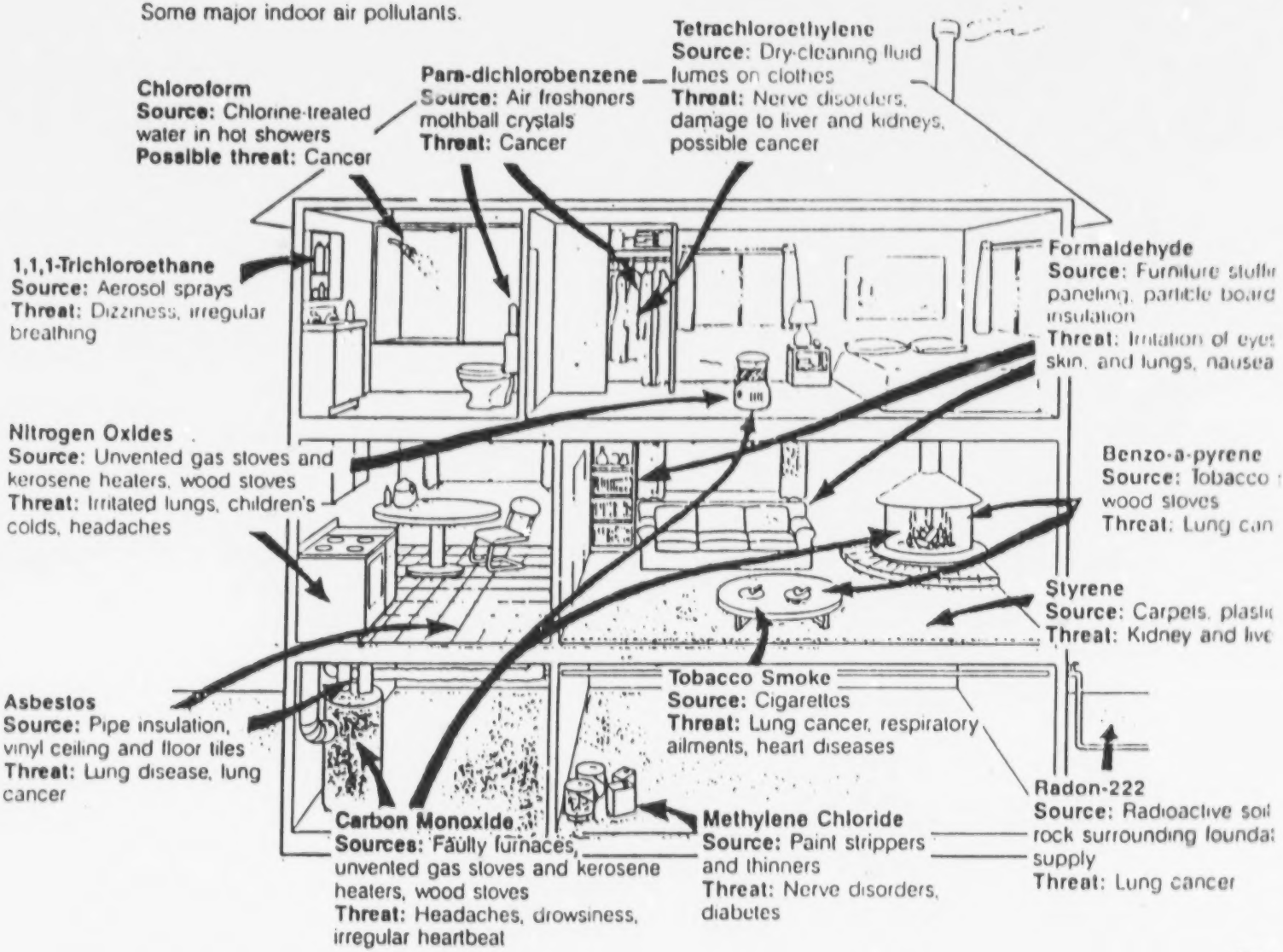
WAYS TO CUT DOWN YOUR SMOKING

Many people find that cutting down on cigarettes day by day makes it possible to stop. Here's a list of ways that worked for some of us.

- Decide to smoke only once an hour. Or decide to stop smoking for an entire hour and then start lengthening that time by half hours.
- Make it hard to get and smoke a cigarette. Wrap up the package and put elastic bands around it. Smoke with your left hand if you usually smoke with your right.
- Change to a brand you don't like. Buy only one pack at a time.
- If you always have a smoke with your coffee, switch to tea, juice or soda.
- Do something for your body. Get back in shape. Exercise is a great way to relax.
- Call up your friends and tell them you're going to quit.
- If you quit for one day, you can quit for another. Try it.
- Save all the money you would have spent on cigarettes and buy yourself something. You deserve it.
- If you break down and have a cigarette, don't worry. Some people take several tries before they make it.

It's worth quitting no matter how many years you've smoked. So don't give up.

Some major indoor air pollutants.


Chloroform
Source: Chlorine-treated water in hot showers
Possible threat: Cancer
Para-dichlorobenzene
Source: Air freshoners mothball crystals
Threat: Cancer
Tetrachloroethylene
Source: Dry-cleaning fluid fumes on clothes
Threat: Nerve disorders, damage to liver and kidneys, possible cancer
1,1,1-Trichloroethane
Source: Aerosol sprays
Threat: Dizziness, irregular breathing
Formaldehyde
Source: Furniture stuffi paneling, particle board insulation
Threat: Irritation of eyes skin, and lungs, nausea
Nitrogen Oxides
Source: Unvented gas stoves and kerosene heaters, wood stoves
Threat: Irritated lungs, children's colds, headaches
Benzo-a-pyrene
Source: Tobacco wood stoves
Threat: Lung can
Styrene
Source: Carpets, plasti
Threat: Kidney and live
Asbestos
Source: Pipe insulation, vinyl ceiling and floor tiles
Threat: Lung disease, lung cancer
Tobacco Smoke
Source: Cigarettes
Threat: Lung cancer, respiratory ailments, heart diseases
Radon-222
Source: Radioactive soil rock surrounding founda supply
Threat: Lung cancer
Carbon Monoxide
Sources: Faulty furnaces, unvented gas stoves and kerosene heaters, wood stoves
Threat: Headaches, drowsiness, irregular heartbeat
Methylene Chloride
Source: Paint strippers and thinners
Threat: Nerve disorders, diabetes

The Kitchen:

Possible hazards: oven cleaner, metal polish, scouring powder, dish/dishwasher detergent

Substitutes: Oven cleaner: For baked on spills, sprinkle with salt or baking soda while still warm and remove with nylon mesh scrubber. For big jobs, make salt/baking soda paste with water, apply to cold oven and let sit overnight. Remove with stiff fiber brush or plastic mesh scrubber (do not use steel wool or wire brushes). Rinse. Metal polish (for unvarnished copper or brass): rub lightly with paste of flour, lemon juice and salt; rinse and dry. Stainless steel: rub with undiluted vinegar or club soda to remove streaks. Silver: rub on non-abrasive toothpaste OR baking soda, rinse and dry. Scouring powder: Baking soda or borax applied with a damp sponge, for tougher stains, use a mixture of baking soda and table salt. Non-chlorine scouring powder, such as Bon Ami. Dishwashing (both hand and automatic): Non-phosphate, perfume-free products are available, or make your own for hand washing by dissolving soap chips in warm water.

Bathroom:

Possible hazards: disinfectants, tub, tile and toilet bowl cleaners, drain unclogger, air fresheners

Substitutes: Tub, tile and toilet: baking soda or borax applied with a damp sponge; 1/2 lemon rubbed over discolored areas.

Disinfectant: Borax.

Drain unclogger: Weekly application of boiling water to prevent clogs; plunger or plumber's snake; 1/2 cup baking soda, followed by 1/2 cup white vinegar-after 15 minutes, flush with boiling water.

Air fresheners: Herbs and spices (lavender flowers, cinnamon, cloves, orange peel) simmered in pot of water on stove, or over warming candle. White vinegar in shallow uncovered dish near stove or in room where people smoke.

General Cleaning:

Possible hazards: all purpose cleaning solutions, glass cleaner, furniture polish, dusting spray, rug cleaners, moth balls, upholstery cleaners

Substitutes: Cleaning solutions: Baking soda; borax; white vinegar mixed with water; vegetable-oil-based soaps such as Murphy's Oil Soap Glass Cleaner: White vinegar and water. Apply with soft cloth or crumpled newspaper. Furniture polish, dusting spray: real lemon oil; mix vinegar or lemon juice and vegetable oil (test on hidden surface before using) Rug cleaners: to deodorize, baking soda and baking soda-based products; apply dry, let settle, vacuum. To remove stains scrub with baking soda and water, allow to dry, vacuum (first test on inconspicuous part of rug). Mothballs: Cedar chips in muslin bag. Cedar lined closet shelves. Renew with cedar oil.

The Laundry:

Possible hazards: Bleach, phosphate detergents**, stain removers, fabric softeners

Substitutes: Bleach: 1 part hydrogen peroxide to 8 parts water used as a presoak (for natural fabrics only; test small corner first); Borax and baking soda both reduce need for bleach; Or dry items flat in bright sunlight. Detergent: Non-phosphate variety or use powdered soap (non-detergent), such as Ivory Flakes. Stain and spot remover: baking soda paste rubbed on spot with toothbrush before washing. Remove grease with application of chalk or cornstarch.

The Utility Room:

Possible hazards: paints, stains, thinners, paint remover, solvent, turpentine, glue, photographic chemicals, art and hobby materials

Substitutes: Paints, thinners, solvents, et. al.: The wide variety and great toxic potential of this category of HHW makes "thumbnail" suggestions difficult. Commercial alternatives are now available to cover most requirements. (See OPI Vol 2, No. 3, "Baubiology," and resource list for more information). In general, latex paints are considered safer to use, clean up (with soap and water) and dispose of. Residues can be dried (mix with kitty litter to speed things up) and thrown away with regular trash. If you must use oil-based paints and stains, buy only what you need, use up, then dispose of container as HHW.

Photography, art, hobbies: Study a comprehensive manual, read labels, and contact suppliers for disposal instructions. (see resources)

The Yard:

Possible hazards: Fertilizers, insecticides, used motor oil, transmission and brake fluids, antifreeze, windshield cleaner, gasoline, wood preservatives, road salt and de-icing crystals

Substitutes: Fertilizers: Compost, manure. Insecticides: Companion planting, soap and water wash, slug traps, hardy species. Used motor oil and other used car fluids: Save used oil and transmission fluid in original containers and return to dealer with receipts. Or, have car serviced by reputable firm that will dispose of properly. Antifreeze: never pour on the ground. Antifreeze is attractive but deadly for animals. Hold for HHW disposal or follow package directions. Windshield Cleaner: Use up. Save container for HHW disposal or follow package directions. Wood preservatives: insect and moisture resistant varieties of wood (cedar, cypress, oak). Salt: Sand.

One More Thing:

Batteries: Some people are surprised to learn that these contain toxic heavy metals and can be considered HHW. Hold for HHW disposal. Substitutes: Battery-optional appliances and rechargeable bat-

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ENVIRONMENTAL HEALTH

Selected references (some from which materials were adapted):

Brown, Lester R., State of the World, New York: W. W. Norton & Co., 1991.

Federal Committee for the Environment, State of the Environment in Czechoslovakia, Prague: Vesmir, 1992.

"How to Quit Cigarettes," American Cancer Society.

Miller, G. Tyler, Environmental Science: Sustaining the Earth, Belmont: Wadworth Publ. Co., 1991.

"One Person's Impact: Practical Actions for Conscious Living," Vol. III, No. 2, March/April, 1991.

Turk, Jonathan, Introduction to Environmental Studies, Philadelphia: Saunders College Publ., 1985.

"Why Risk Heart Attack? Seven Ways to Guard Your Heart," American Heart Association, National Center, 7320 Greenville Ave., Dallas, TE 75231.

ENVIRONMENTAL COMPARATIVE RISK ASSESSMENT UNIT

This unit is designed to improve people's ability to make decisions in situations that have overlapping, complex issues. The activity provides a number of interrelated environmental and health problems within a ficticious city that must be confronted. People working together in groups must make decisions on how to approach the problems. It is necessary to realize that there is no "right" answer. What is important in this activity is that people learn the "process" of decision making. In particular, this unit deals with environmental comparative risk assessment. It may take six or seven hours to complete.It is best presented in one day with a number of breaks built into the presentation.

ACTIVITY 1:

Rationale - To define the term comparative risk assessment.

1. Explain and define the term "comparative risk". Comparative risk is a process of systematic thinking, research and decision making used to compare the amount of risk from more than one environmental hazard. It focuses on using available data - not creating new data. Noone ever has enough data to make a perfect decision or come up with the perfect answer to a problem. A comparative risk is made from clear assumptions about a situation. The assumptions are made from available, scientific data. To make decisions informed judgments must be used to make a plan to solve the problems. The people in the community must be involved in the process. This helps the people in power to make concrete plans for actions that most people will accept because everyone helped to make the plan based on many people's input from information that they already have. This shares the responsibility for any results from an action plan.

Comparative risk is a new tool for many people because they have only done risk assessments in the past. Risk assessment is making decisions based on precise data. Scientists are usually uncomfortable about using comparative risk assessment because it is not precise.

ACTIVITY 2:

Rationale - To learn about comparative environmental risk assessment by practicing with a simulated model of a fictitious community.

A. Read the story about a ficticious community, Bobovia (SEE END OF UNIT). Stop at the end of each paragraph to go over any questions.

B. When finished reading the entire story, ask the group who are the "major players" of Bobovia. List them on the board. Make sure that everyone understands everything about the community and its problems. This is essential! (When this is completed, it might be desirable to take a break at this time.)

C. Discuss the steps in environmental comparative risk:

1. What are the hazards?
2. How dangerous are they?
3. How do people come in contact with them?
4. What risk does each hazard cause at this time and place?
5. How are the problems similar and different?

6. What problems are the most serious?
7. Ranking?

D. Discuss ranking (Tell the students that public participation in all steps is crucial but particularly in this step). Frequency and severity are important considerations for ranking.

Techniques for ranking

1. Voting - Open, secret and more than one vote system
2. Multi-voting - Each person gets an agreed upon number of votes and distributes them on different choices according to preference
3. Weighted calculation voting - Assign numbers and scales
4. Sorting - Prioritizing into categories
5. Other techniques

E. Discuss that prevention of problems is the most important. In a pyramid type structure, source reduction should be the base, recycling next, then treatment of the pollutants and finally proper disposal. (This model may not fit in all situations but prevention in the first place is the key).

F. Explain how to develop action plans

1. Action plans must have concrete attainable (not fantasy) goals.
2. Risk reduction strategies must be developed in a logical method.
3. Economics - money must be considered and the short and long time economic effects.
4. Strategies must be related to a sustainable environmnental philosophy.
5. DO THE MOST SIMPLE ACTION FIRST! The first problem to be solved must be widely seen as a problem and must be solvable. This will give confidence to the group and credibility in the eyes of the community for future actions.

G. Divide everyone into groups of four or five. Explain that each group is to prepare an independent plan of action to deal with the environmental problems of Bobovia. Each group has 80,000 blintzes to spend on environmental problems. How will each spend the money? Decide on which problems are most inportant, most economically realistic, most solvable and which are the most important to the local inhabitants. Then each group must develop an action plan. Tell the groups that later each group will get a large sheet of paper in order to make a ten minute presentation to the others. Everyone in the group will be expected to verbally contribute during the ten minute presentation. After the presentation all the others will have a chance to ask questions and comment.(Also try to keep the question period to ten minutes. Everyone will be rather tired by this time.)

This phase of the activity may take three or more hours. It is best to have a break in the middle. After the break it is necessary to give out large paper and a marker to each group in order to make the groups realize that they must now make those hard decisions that they have been putting off and to organize their presentations. Each group should decide on what the major problems are as they see it and what they plan to do about it. Throughout this entire phase it is very important to continually visit each group to answer questions and keep the groups and individuals ON TASK and FOCUSED. Sometimes groups may get bogged down over an issue. Often they will avoid the decision making process. Many do not like to be held responsible for making

a decision. Explain that everyone in a democracy is responsible for their own decisions. Decisions must be accepted by consensus.If a question is asked about an ambiguous interpretation of some element of the story, your response (you act as God in these circumstances!) must be told to all the groups so that everyone has the same information.

H. Have each group give their presentation and answer questions from the whole group.

I. After each group presentation congratulate them on successfully dealing with a very difficult and brand new process (if appropriate). Emphasize that there is no one right answer to these kinds of problems. What is important is the steps taken toward prevention of the problem, and for the local people to be involved in the decision-making process, since these are the people who must live with their decision. For each presentation try to find areas to compliment and also point out areas that could be improved upon.

J. Emphasize that the purpose of the lesson was not to solve Bobovia's problems, but to become familiar with the process of decision-making, especially the process of comparative risk assessment. It is important to note that the process of comparative risk assessment can be applied to any similar life problem. The process is portable and can be plugged into future situations requiring decision on comparative issues.

BOBOVIA, CURRIESTAN

LOCATION: Bobovia is on the western shore of the Black Sea, where the Tomac and Gwahana Rivers meet (confluence).

HISTORY: From 1100 - 1850 A.D., Bobovia was an important trading (business) city. It was part of the Hapsburg Empire. It was said that the watch band was invented here and that Milo Krovishnich invented a special type of rudder for boats. Curriestan came under Communist rule in 1945. In 1989, there was a Polyester Revolution. Now there is a parliamentary system.

GEOGRAPHY: Bobovia is 161 km. south of the capital city of Curriestan on the western shore of the Black Sea. The city is on a penninsula (land that has water on three sides), where the two rivers meet. There are many wetlands in the area. The Gwahana River is on the east side of the town. It flows (goes) through Capital City, where all the factories are located. The Gwahana is a large, slow moving, warm water river with marshes (wetlands) along its banks (sides). These marshes fill up with water and flood the nearby lowlands. Part of Bobovia is often flooded. It seems to be getting worse every year. To the west of the town is the Tomac river. This is a small river that comes from the snow in the Cadash Mountains. It flows quickly. There are only a few people who live in the mountains near the beginning of this river. It is famous for its trout fishing. The Tomac is full in the spring and lower in the fall.

Capital City to the north is famous for its smelter (factory to melt metal) and battery reclamation (save and reuse) factory. Three thousand people work there. The winds blow southerly (from the north).

The town has a population of 15,000 people. It is an important transportation area for traffic to go from Capital City to the

southerly border. Most of the traffic passes through the center of the town. About 200 - 300 trucks a day pass through the town.

The wetlands in northeast Bobovia were about 900 hectares. The wetlands are being drained (water is being taken out) at a rate (how fast) of about 20 hectares/year. Today 150 hectares of wetland remains. The wetlands are very important for the migration (travel) of the Orange Cranes to and from the north. Bobovians do not think that the orange cranes are very important, but the people in the area north of Bobovia think that they are a symbol of good luck and beauty. Hundreds of tourists visit Bobovia each year to see these birds. Many other types of water birds use these wetlands. These wetlands are also an important place for carp and other fish.

The ancestral (old) lands of the Krovishnich Family was about 1100 hectares in the northern part of Bobovia. These woodlands are one of the few remaining natural areas in the country. The hills are covered with mature (full grown) hardwoods, such as oak and elm trees. In 1945 the Communist government took the Krovishnich castle and used it as a summer hotel for high officials. The new government uses it for a conference center. The Krovishnich Family wants their lands and castle returned to them. People have illegally (against the law) cut the trees. The new director of the conference center is not interested in this situation. He wants to sell most of the land and use the money to repair the castle. The Society for the Preservation of Trees that are Good for Rudders is headed by town members who are very upset (feel bad) and want to save the rest of the forest.

CLIMATE: Bobovia has temperatures in the low 30's Centigrade in the summer and slightly below freezing in the winter. The winds are light and come from the north. In the winter sumetimes the wind will come from the east. This brings cold air down from the mountains. This causes (makes) thermal inversions (cold air is below the warm air and makes pollutants stay close to the ground). It is very bad in the winter because of all the soft coal used for heating.

AGRICULTURE: Cucumbers, hops and cabbage are grown. Thirty percent (1500) of the people work directly with this. Another 10% (500) work in jobs related to this type of agricultural business, for example, in transportation, with the seeds, pesticides and fertilizers. About 54% of agricultural land is in trouble because of erosion - 42% by water and 12% by wind. The wetlands are drained towards the east in order to make more agricultural land. The pesticide, Aldicarb, is used on all vegetables, and Chlordane is used on cabbage.

INDUSTRY: Schizophrenia Beer and Iron Works is the main industry in the town. The factory is in the center of the town. Twenty five percent (1,250) of the working people work in the factory. Twenty percent (1,000) more of the people work in related jobs. The factory began in 1896. They made 30,000 barrels of beer and 2,000 tons of iron in the 1920's, but in the 1970's they only made 15,000 barrels of beer and 75 tons of iron, because the government did not manage it well. Now, since the revolution they are making again 30,000 barrels of beer, but only 500 tons of iron per year.

The S.B.I.W. factory emits (puts into the air) many tons of toxic pollution from its chimney. The chimney is very high, so some of the pollutants blow away when there is a wind. The emissions

(pollutants) are mostly from making iron. Beer making causes a different problem. When Beer is made, it creates (makes) sludge (solid waste) that has EBB* in it. The sludge water is used to irrigate (water) the crops (plants). The solid part of the sludge makes good fertilizer and has been used with success. There are no laws controlling the use of EBB.

FISHING: Fish are important for food and the economy. There are many carp in the Gwahana River and trout in the Tomac River. A special type of fish, the snapper, is caught in the Black Sea. Last year fishermen caught 15,000 kg. of carp and 6,000 kg. of snapper. This is less than the years before. In 1975 there were 27,000 kg. of carp caught. Trout are sold by individuals (single people) in Capital City where people pay a lot of money for them.

WATER SUPPLY: The town's water supply is from an aquifer (water that is under the ground in between spaces in the rocks and soil) in the northeast of town, between the dump, S.B.&I. and the Gwahana River. Poor families drink from shallow (not deep) wells that get their water from irrigation canals in town. The Gwahana River has not been tested for pollution.

Farmlands are irrigated mostly by floods from the Gwahana River. These floods recharge (return water to) a shallow aquifer that is beneath the town.

An aquifer that is not used is under the Krovishnich land on the west side of the estate. The recharge rate (how fast the water is replaced or comes back) is 14 liters/second. The aquifer now being used by the town is 20 liters/second. If the aquifer on the Krovishnich land is used , five hectares of land needs to be cleared (trees cut down) for a pumping station and pipes. And to do this a 25 hectare corridor through the Krovishnich land would have to be cleared for a short time.

INSTITUTIONS: Since the Polyester Revolution, who holds the power in Bobovia is still in question. The Church is still weak. The mayor and the town council are now elected. The Schizophrenia Beer and Iron Works and its owner, Emil Pavlov, have become very important in the town. And the Bobovian Society for the Preservation of Trees for Rudders has 300 members who are very active politically.

TOWN LANDFILL: Most of the waste from Bobovia goes into the town's landfill (dump) at the northeast corner of the town. The landfill is covered with soil one time a week. Bad smells from the landfill go to the southern, poor part of town. The waste that goes into the dump is: paper, wood, fishing waste, fertilizer, barrels of pesticides, metal and anything else Bobovians decide to throw away. A new landfill would cost 1,000,000 blintzes. This money would not be used for emptying the old dump.

FINANCES: It is thought that money for environmental projects will be about 80,000,000 blintzes in 1993, and 40,000,000 blintzes in 1994. This money is received from the following areas: 2,000,000 blintzes from a tax on fish (100 blintze/kilo), 40,000,000 blintzes in taxes paid by S.B.I.W.in 1993, 40,000,000 blintzes from the federal government, but this money will not be available in 1994. The town can develop other plans to raise taxes, but it can not tax people for using its roads.If the town tries to raise more than 30,000,000 blintzes/year, it will be terribly difficult, financially, for the people of Bobovia. Any

plans to raise new taxes will require one new tax collector for each 10,000,000 blintzes collected.

There is no tax on trout.

To train (educate or teach) someone for a government job costs about 1,000,000 blintzes. Government workers get 2,000,000 blintzes/year. Training programs are in:

Forest Management
Game Warden
Wetland Conservation
Agricultural Extension Agent
Environmental Education Extension Agent
Industrial Facility Inspector
Water Supply Technician
Landfill Specialists
Lab Technicians
Tax Collectors

There are not enough Government laboratories. It would cost 1,000,000 blintzes to test crops (planted food) and 1,000,000 blintzes to test fish. Also, it would cost 1,000,000 blintzes to test water. For a private lab to do the tests, it would cost 300,000 blintzes/year for crops and fish and 10,000 blintzes/test to test water.

The World Bank may pay for a filter system on the chimney of S.B.I.W., if the factory will give 30,000,000 blintzes towards the cost and also pay for a filter inspector. The federal government wants the local government to make the factory put a filter on its chimney. If the factory does not put a filter on the chimney, the federal government will not give the town of Bobovia 10,000,000 blintzes in tax money. S.B.I.W. says that it only has 20,000,000 blintzes for this.

The Town of Bobovia has:

4 grammar (basic or elementary) schools
1 high school
1 technical school - for agriculture and fishing
2 health clinics - they need three more workers
1 agricultural office - with one person with little training - they need three people
Krovishnich University - experts in engineering - the university helps the town - it is their philosophy

Demographics of the population:

<15 years old = 15%
20 - 40 = 35%
40 - 60 = 30%
60+ = 20%

Thirty percent are "poor". Two-thirds of this 30% live in the south part of town and have no running water in their homes.

* EBB is a chemical that causes cancer. It was used at the Schizophrenic Beer and Iron Works from 1943 - 1989 as a metal cleaner and from 1945 - 1990 to add flavor to the beer. There are no laws to stop its use.

Town of Bobovia,
in Curriestan
To Capital City
Krovosinich Estate
Crops
Wetlands
Tomac
River
Well
Dump
Gwahana
River
Cadash Mountains
S.B.&I
Town
Coastal
Highway
To Black
Sea

ENVIRONMENTAL COMPARATIVE RISK ASSESSMENT

Selected references (some from which materials were adapted):

"Comparative Risk Analysis Trainees Manual," Strategic Planning & management Division, United States Environmental Protection Agency, Washington D. C., 1992.

"Environment 1991: Risk to Vermont and Vermonters - A Report by the Public Advisory Committee, The Strategy for Vermont's Third Century," Vermont Agency of Natural Resources, 1991.

ECO-TOURISM UNIT

The concept of eco-tourism is rather a new word - within the last decade. Eco-tourism means tourism that is "environmentally friendly" (SEE SUGGESTIONS BELOW). Certain trips are related to the natural environment. When these trips are planned, people must consider the fragility of these environments. Some examples of eco-tourism are trips to: farms, nature preserves and national parks, etc. Other types of eco-tourist trips are: to folk festivals and folk dancing, folk art and craft shows, historically and architecturally important buildings. These reflect the past history of the people and their relationship to their natural environment. Different types of activities on these trips are: birdwatching, botany and geology studies, nature photography, skiing, hiking, rock climbing, caving, horseback riding. fishing, hunting, boating, sightseeing, research, etc.

The Eastern and Central European countries are opening their doors to tourists, especially from the West to help their economies. They must learn to protect their "special" places. One very "special" area is along the former borders. These areas were virtually off-limits to the public under the Communist regime, except for the military. They now need to be quickly protected from overuse by tourists eager to glimpse some "unspoiled" natural areas.

Eco-tourism has become a "catch-all" word. Some trips are promoted as eco-trips but actually exploit the natural environment. BELOW IS A LIST OF SUGGESTIONS FOR ECO-TOURISM.

SUGGESTIONS:

1. Make sure tour guides know the specific environmental issues important to the area.
2. There should be no more than 12 people on a tour.
3. Leaders should make sure that visitors should stay in designated areas and on trails.
4. Accomodations should be in modest lodgings, guest houses and tenting rather than in big, resource-intensive hotels. These facilities should be located within a city, town or village and not in an area that further impacts the natural environment. Visitors should be encouraged to bring a minimum of luggage and travelling "things."
5. All litter from the visitors should be taken back to a recycling or legitimate waste facility, where the tour guide's office is located. The tour company may have to pay extra in his or her community for this service. The leader should use reusable or recyclable containers.
6. Food on the trip should be healthy: plenty of clean water, whole grains, vegetables and fruits, low fat, sugar and salt and as chemically-free as possible.
7. The travelling vehicle should be well maintained and use as little fuel as possible. Cars, busses, and trucks should use unleaded gas and catalytic converters. If possible, travel by train. Planes are very convenient but use a great deal of our natural resources, so avoid them when possible.
8. If people need toilets on outdoor trips, use designated facilities or holding tanks. Also, dispose of the holding tanks waste in only designated areas. If the group is on a day trip and there are no facilities, use the "cat scratch" method. If you need to use nature as your toilet, step as carefully as possible off the trail (so as not to trample and damge the vegetation). Scratch a very small area with a stick and only use this area.

When finished, make sure you cover everything, including any paper with the original soil, small leaves and small rocks.
9. The leader can charge the clients a small amount of extra money in the tour fee for a contribution to a conservation group working in the area.

ACTIVITY 1:

Rationale - To plan an ecologically sensitive hike or cross-country ski trip in a national park or preserve (SEE SUGGESTIONS AT THE BEGINNING OF THE UNIT).

Give to groups of two, the same maps of a large detailed national park or nature preserve area or give maps of some region which has interesting natural and/or historical features. Go over technical English words that they should know in order to read the map or explain it. SEE THE WORD LIST AT THE END OF THE ACTIVITY. Go over the words using places on the map as examples. Tell the group to plan a hiking or cross-country ski trip for a foreigner in the local area. When everyone is finished hang up a map and have each pair explain to the large group their trip, using notes if needed, and pointing it out on the map. Directions, natural and historical features should be described along the trip. The trip can be one-half day, one day or longer. The pair should each take a turn describing a different part of the trip to everyone. The individuals should try and use as many of the new words as possible. Discuss the eco-tourism suggestions listed above.

MAP VOCABULARY: Scale, Legend, Contour Line, Trail/Path, Crossroad, Ridge, Slope, Valley, Wetland (eg. marsh, bog), etc.

ACTIVITY 2:

Rationale - To plan an ecologically sensitive tour of a country (SEE BEGINNING OF UNIT).

Give a map of the country to small groups of two to three people. They can create a trip in their country for foreigners using any length of time. They must plan sleeping accomodations, eating arrangements, transportation, a timetable and costs. The kinds of trips for activities that they can choose from are listed in the introduction to the unit. No group should have the same topic. Plans for the trips should center around something connected with the environment. Using notes only, each pair should present their trip to the large group pointing out the places on the map as they speak. Each one in the small group should have an opportunity to do some of the speaking in front of the large group.

ECO-TOURISM

Selected references (some from which materials were adapted):

Atlas CSFR, Prague: Geodeticky a kartograficky Podnik, 1984.

"E-Tours," P.O. Box 37B, Uherske Hradiste, Czech Republic, 1992.

Dernoi, Louis-Antoine, "Tourism, Mikulov 2002 - Towards a Market Oriented Tourism Development," Mikulov, South Moravia, Czech and Slovak Federated Republic, Unpublished, 1992.

"Krkonose National Park Map, "Prague: Vydala z Pracovala Vytiskla Kartografie, 1992.

SOCIAL ACTION UNIT

"Never doubt that a small group of committed citizens can change the world. Indeed, it's the only thing that ever has."
Margaret Meade

Most citizens in the post Communist world have little, if any, experience with decision-making, especially in regards to the environment. During the forty plus years under Communism environmental decisions were made from above, behind closed doors. There was no imput from environmental experts nor the public. Often the process was referred to as "telephone law." Local environmentalists would receive information from "above" by telephone, as to what environmental laws were to be implemented and enforced.

With the introduction of democracy the process still has not changed much. Since urgency is synonymous with environmental decision-making today, many governmental officials continue to act in the same manner of their past role models. They believe that to open up the system to public imput will only slow the process. Also the thinking still persists that decisions should be left to the "experts" and not be exposed to citizen participation.

This unit is intended to introduce environmentalists to the ideas of citizen participation in the environmental decision making process.

ACTIVITY 1:

Rationale - To introduce people to social action strategies at the grass root's level in a democracy.

1. Begin by referring to the above introduction and the need to raise the awareness of environmentalists of their rights, obligations and responsibilities in a democracy and to develop skills in social action. There are a variety of strategies that can be used to foster social action. Present the following list of strategies, and explain each in turn:

1. SURVEY the public.
2. READ all that's available on the subject.
3. TALK to the experts.
4. TELEPHONE everyone who has information or could influence the decision.
5. WRITE LETTERS (same as above).
6. MEDIA - contact all available media to spread your message and raise public support.
7. INTERVIEW key people.
8. RAISE MONEY.
9. CHANGE LAWS - if it's an obstacle to your cause -

HOW TO CHANGE THE LAW:
LOBBY - present your cause to all who will vote on your bill.
TELEPHONE all law makers.
SPEAK to all law makers:
INDIVIDUALS (one-to-one)
COMMITTEES (present your cause at committee hearings)

ACTIVITY 2:

Rationale - To learn social action strategies from a case study.

Distribute copies of the non-fictional story, "People Power or How to Work the System" (SEE END OF UNIT). Begin by explaining that the story they are about to read is a TRUE story and not a fairy tale. Have each person read a paragraph of the story and discuss difficult words and concepts. At the end of the first page have one person retell in his/her own words what is happening in the story (to make sure everyone understands everything). Read and finish the second page in the same manner. When the story has been completed, ask for comments and questions. You will probably hear that the story really is a fairy tale. Explain that this actually happened, that it does not happen all the time throughout America, but these were bright students with a very dedicated teacher. Also point out that although this kind of thing does not happen every day in the U.S.A., things like this DO go on throughout the country at different levels and, of course, with different degrees of success. Everywhere in the U. S. groups are actively involved in changing the system on local, state and national levels.

Ask what in this story is possible to do in their community? Discuss how all this is new, but people and law makers will change in the near future as both become more sophisticated and exposed to more Western ideas. Politicians are not use to being responsible to the citizenry, and vice-versa. Politicians rarely, if ever, receive communications directly from the public. If they begin to get letters from people for both good and bad legislation, they may become more receptive. If in response to incompetent and environmentally callous decisions, you inform your law makers that you will not vote for them or their party in the next election, and if they receive a continuous stream of letters from the public saying the same thing, then it is possible that these law makers will become more receptive to the needs of the people. Of course, creating change will not happen all at once. Nor will you constantly meet with success. In fact, the opposite will be more likely, and change will come very slowly accompanied by many frustrations, but that is the way to begin to initiate change in the system. The IDEAS for change have to begin somewhere and sometime and NOW is the best time to begin. Why wait? Also, start small! Point out that the first project for changing the system should be something small and attainable. An initial small success will provide confidence to the group and legitimacy for future projects in the eyes of the community from whom you need support.

ACTIVITY 3:

Rationale - To discuss ten specific steps toward taking social action.

Distribute "Ten Tips For Taking Social Action" and discuss.

1) CHOOSE A PROBLEM
2) DO YOUR RESEARCH
3) BRAINSTORM POSSIBLE SOLUTIONS
4) BUILD SUPPORT WITH OTHER GROUPS
5) KNOW YOUR OPPOSITION
6) ADVERTISE
7) RAISE MONEY
8) CARRY OUT YOUR SOLUTION

9) EVALUATE
10) DONT GIVE UP!!

ACTIVITY 4:

Rationale - To find ways of fundraising for social action projects.

Possible fundaisers:

The following list of fundraisers are successful in the United States. Many of these will not work in your local country. They are presented to the group as a way of brainstorming new ideas that will be suitable for the local community.

SUGGESTIONS:

1. BAKE SALE - Parents and children bake pies, cakes, cookies, etc. Then, on one particular day in a public place (often in front of a market) they are sold to the public.
2. YARD SALE - On a particular day and place everyone brings all their unwanted, no longer used possessions. Tables are setup upon which to display these possessions, and they are sold to the public.*
3. SPAGHETTI SUPPER - On a particular evening, everyone joins together to cook, prepare and serve a spaghetti supper (spaghetti with tomato sauce, bread,), homemade cookies/cakes and drinks. Then, the community is invited to eat for a fee.
4. PANCAKE BREAKFAST - Same as above, only it is held on a special morning, such as the day of a big public event, eg. Earth Day or a parade.
5. BACKYARD CARNIVAL - Adults and youngsters make simple, but fun games of chance and contests for children in a vacant field. Some suggestions for games could be: "ring toss" with a gasket and empty bottles, knock down stacked beer cans with three balls and a make-up table. Kids love to have their faces made-up or painted as an adult, animal, pixie, etc. Prizes can be inexpensive or used toys, candy, cookies, etc. The community children are invited to buy tickets for all games/booths from one person who holds all the money and distributes the tickets at one table.*
6. SHOW A MOVIE - Select one of particular interest and charge a fee.*
7. "RENT-A-KID" - On a particular day youngsters of an organization are "rented" by the hour to work for individuals in the community, doing such odd jobs as raking leaves, cleaning attics, washing windows, etc.
8. WALK-A-THON - Members of an organization get pledges (promises of money) from sponsors: their family, friends, neighbors, etc. to give an individual member money for each kilometer walked. (Each sponsor can give any amount of money per kilometer that they wish). The members join together to walk a predetermined length, maybe 20 kilometers. Afterwards the members collect the appropriate amount of money from each sponsor. Variations of a walk-a-thon could be a dance-a-thon, swim-a-thon or wherever your imagination takes you.

* Another major money-maker at this type of event is to sell refreshments!

People Power
or
How to Work the System
(A True Story)

The sixth grade students (twelve years old) of the Jackson Elementary School in Salt lake City, Utah came to school very concerned. Some of the students were talking about those big, empty drums (barrels) that filled the field near the school. They had seen "stuff" in the bottom of some of them and thought that this "stuff" might be poisonous [toxic].

In class they talked about the empty drums. They decided to go to the city health department to ask them what the city was going to do about these drums. The health department told the students that they knew about these drums, that there were as many as 50,000 drums in the field and that "there is nothing the kids can do about it!"

The students decided that there WAS something they could do about it! They decided to write a door-to-door survey [questionaire] and go around the neighborhood asking the people what they thought about 50,000, possibly toxic drums in their neighborhood. And they also chose to search for wells in order for the health department to take samples from them. Unfortunately, the students found few wells, and they were shocked by the answers to their survey. The neighbors had an "I don't care" attitude!

Back in the classroom the students began to read every article on toxic waste they could find in national and local newspapers and magazines from the past six months. Then they asked experts, such as health officials and members of toxic waste clean-up teams to come to their class and talk to them.

They called the federal government Environmental Protection Agency (EPA) and wrote to the local office of the EPA. They contacted the local power company on whose land the dump site was located.

They contacted [called] local newspapers and television stations for media coverage.

And they visited the mayor, who was a former teacher and promised to clean up the dump sight in eighteen months.

The students went to talk to the owner of the dump site. He explained to them that he was NOT polluting anything. By bringing the drums here from all over the entire region and recycling them, he was helping to keep the rest of the environment clean. This was very confusing to the students.

Although the students had done quite a lot in one school year, even graduation day found them in ties and jackets and dresses running to the dump site to watch a team of researchers from the EPA inspect the drums.

Over the summer several unfortunate things happened. The owner of the dump had a heart-attack. Many of the children thought they were responsible for it. And the teacher, a woman with many years experience, received three threatening phone calls.

The new school year started with an unexpected problem. The old sixth graders had moved on to the seventh grade. And the old fifth graders were now the new sixth graders. Who was going to carry on the battle to clean up the 50,000 drums from the neighborhood dump site? After much talk a compromise was reached, and the two classes would work together.

82A

They decided that it was necessary to raise money to give to the city health department to be used to clean up the dump site. First they had a "White Elephant Sale." Students put out tables along the street. On the tables they put all their old toys, dolls, mini-cars and anything else they were willing to give. Other children came and bought them. They raised $468! Next they mailed 550 letters to businesses and environmental groups asking for money for hazardous [toxic] waste clean-up. This brought in another $2,700! During this time the EPA mailed the students the results of their findings: the ground water and soil WAS polluted! And the EPA wanted the state of Utah to put this dump site on a special "Priority list" for toxic waste clean-up, since this site threatened to pollute the drinking water of the 477,000 people living in the Salt Lake City valley!

When the students finished raising their money, they brought it to the city health department, but the health department could not accept it. The law would not let them use this money to clean up the toxic waste site.

And so there was only one thing left for the students to do. They decided to change the law! They wrote a new law creating a Utah State Superfund, which would let the state use money to clean up toxic waste sites. The students lobbied the law makers: they telephoned, spoke before committees and spoke before the Senate.

The bill passed without one vote against it!

SOCIAL ACTION

Selected references (some from which materials were adapted):

Earthworks Group, 50 Simple Things Kids can Do to Save the Earth, Kansas City: Andrews and McNeel, 1990.

Lewis, Barbara A., The Kids Guide to Social Action: How to Solve the Social Problems You Choose - and Turn Creative Thinking into Positive Action, Minneapolis: Free Spirit Publ. Inc., 1991.

BIRD UNIT

The topic of birds is usually familiar to most environmentalists. The discussion of birds and habitat stimulates environmental awareness. The leader does not need to have a great knowledge about birds to guide a group through this unit.

Activity 1:

Rationale - To stimulate awareness of the unique characteristics of a bird.

Why Are Birds Birds?

Have the group try to answer this question.

Characteristics of birds are:
1. Birds have feathers.
2. They have wings.
3. Birds have two legs and two feet.
4. They have bills.
5. They have no teeth.
6. The young hatch out of eggs.
7. Birds are very light because they have large air spaces in their bones.

Activity 2:

Rationale - To identify various parts of a bird's body, its behavior and habitats.

Have the group take five minutes and individually try to fill in the bird picture. (SEE END OF UNIT). It is possible to draw your own bird or use another sample from a magazine or book and to adapt it to your group's needs.

Go over the various parts of a bird with the group and relate the body parts, when possible, to the human anatomy. Also, go over the names of the parts of the bird that are already typed on the activity sheet (if you are using it).

Discuss the possible sizes, shapes, colors and field marks on birds in general. Observe bird behavior and habitat. SEE BELOW UNDER SUGGESTIONS FOR HELP IN LEADING THE DISCUSSION. These topics are pictured on the Activity 2 sheet. This activity increases specialized vocabulary.

SUGGESTIONS:

Size:

In the U.S.A. the size of all birds are compared to either the small-sized sparrow, medium-sized robin or large-sized crow. In other countries there may be other types of birds used for comparisons. Suggest that the group members can decide on three common birds in their country to represent the small, medium and large category of bird sizes and to compare other birds to these ones. This exercise enables students to think about the concept of size comparison relative to a standard when describing a bird. The group can use the names of their birds in their own language. Pictures are very helpful as examples for the suggestions below.

Shape:

This can deal with the body, wings, tail or head. The body can be long, tall, thin, fat.. The head can be big, small.. The bill can be discussed in ACTIVITY 3 (SEE BELOW). The wings can be broad, narrow, rounded, pointed, curved.. The tail can be long, wide, short, pointed, forked, thin.. Allow the members of the group to give their ideas when possible.

Field Marks:

When discussiong field marks be general. Are their marks, stripes or bars on the bird and whereabouts? Are there rings around the bird's eyes? What are the colors of the bird?

Bird Behavior:

Ask the group what is the bird doing? Use a picture or the activity sheet? For instance, is the bird singing, looking for food, flying, mating, migrating and etc. What is their flying behavior? Do they fly in a straight, zigzag or a curved line, in a spiral, fast, flapping their wings constantly, gliding, in an up and down pattern..?

Habitat:

Where did you see the bird? Does it live or nest in a river, lake, ocean, wetland, forest, mountains, city..? You can also discuss if the bird was on top of the tree, in the middle of the tree, on the trunk, on the ground, at the edge of a body of water..? The same species of birds are always found in the same general area. This is their habitat.

If this is a foreign country for you, it is acceptable to tell the group that you are not familiar with their birds, and you are also not an expert (ornithologist). Do stress that EVERYONE is capable of observing and enjoying birds and their natural habitats. In fact the group members may want to further explore the topics individually or as a group and bring this information back to their next meeting for further discussions.

ACTIVITY 3:

Rationale - To relate a bird's bill structure to its food source.

Give each student a picture of "FILL THE BILL" (SEE END OF UNIT). explain the various types of bird foods. Then, give them five minutes to place the correct bird according to its bill structure in the appropriate box. Ask the group why this bill would be appropriate for this type of food? Have them describe the bird's bill. Be ready to give the species of birds in English because there seems to always be an individual who wants to know (THE ANSWERS ARE ON THE BACK OF THE ACTIVITY SHEET).

ACTIVITY 4:

Rationale - To reinforce material used in activity 1,2 and 3.

Have each person draw a fantasy bird on a large piece of paper big enough for everyone to see. Give them five minutes to do this and tell them that it is not important to be an artist. Everyone holds their picture up in front of the group and describes the bird (parts of its body) and its behavior.

ACTIVITY 5:

Rationale - To discuss human impact on birds.

Discuss how human behavior has negatively impacted birds. Some answers are: habitat destruction, the sale of bird feathers, skins and beaks, the illegal pet trade, sport hunters, lead shot poisoning, introduced wildlife and pets that prey on birds, pesticides and pollution problems.

Then, discuss how man can help birds to survive. Again, some answers are: building nesting boxes, planting trees and shrubs for food and protection, leaving old trees for habitat, joining a birding club, educating others about birds, encouraging farmers to use organic farming techniques, sponsoring projects that support bird habitat and writing your local representatives about problems that affect habitat, such as draining wetlands and pollution problems.

ACTIVITY 6:

Rationale - To observe birds and their behavior in the field.

Encourage the group to go into the field with you. Point out a nearby bird and describe it using the vocabulary that the students learnt. Find as many other birds as possible and repeat the process. Give them each a sheet of paper and ask them to write down a description of a bird that they see during the day, and also the time, place and its behavior. At the next meeting with your group you can use this as a review.

WHAT BIRD DID YOU SEE?

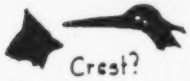
LOOK AT

SIZE Bigger or Smaller than
Sparrow
Robin
Crow

SHAPE

of HEAD

Beak

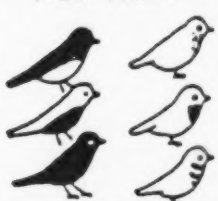


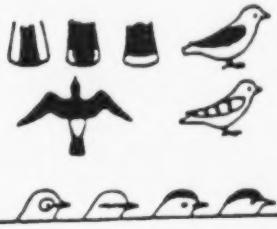
Crest?

of WINGS

of TAIL

COLOR & FIELD MARKS



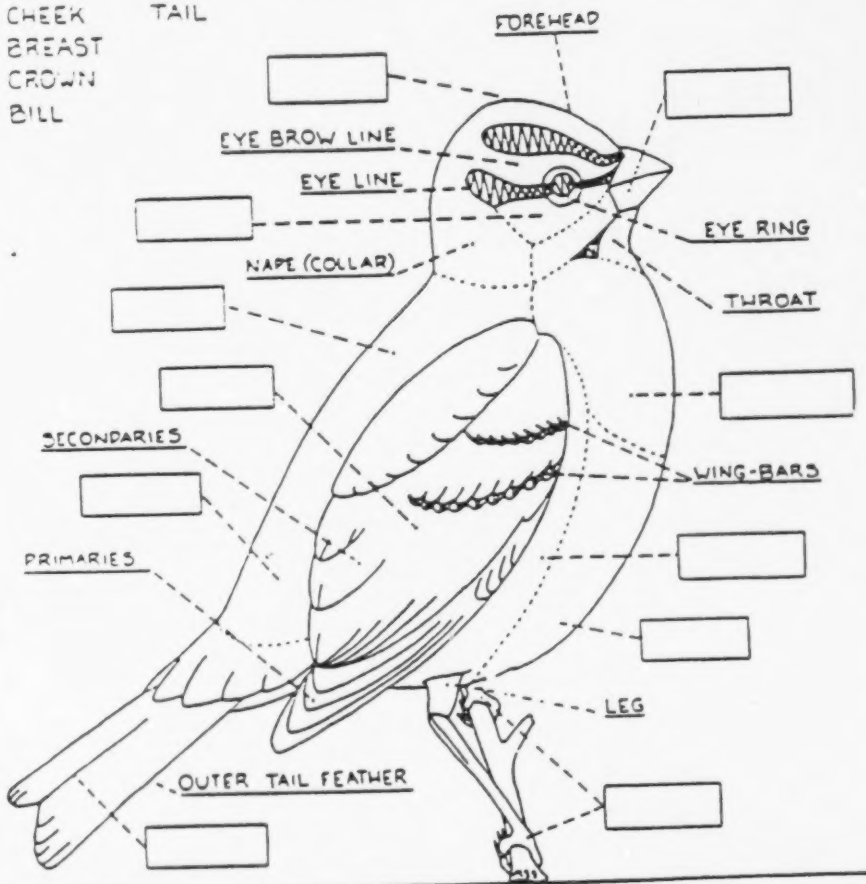


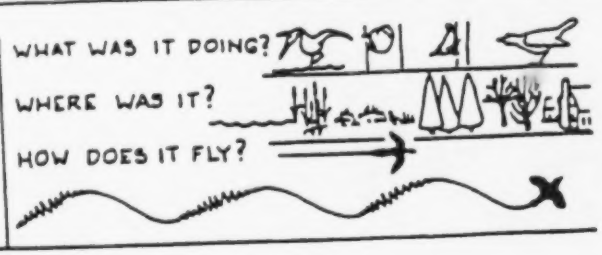
THE PARTS OF A BIRD

FILL IN THE BOXES

AND LEARN THESE PARTS

BACK	SIDE	FEET
RUMP	BELLY	WING
CHEEK	TAIL	
BREAST		
CROWN		
BILL		





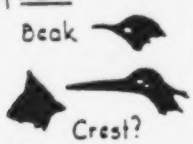
WHAT BIRD DID YOU SEE?

LOOK AT

SIZE Bigger or Smaller than
Sparrow
Robin
Crow

SHAPE

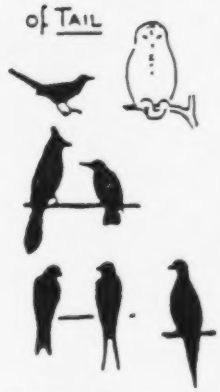
of HEAD
Beak



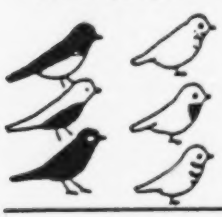
Crest?

of WINGS

of TAIL



COLOR & FIELD MARKS

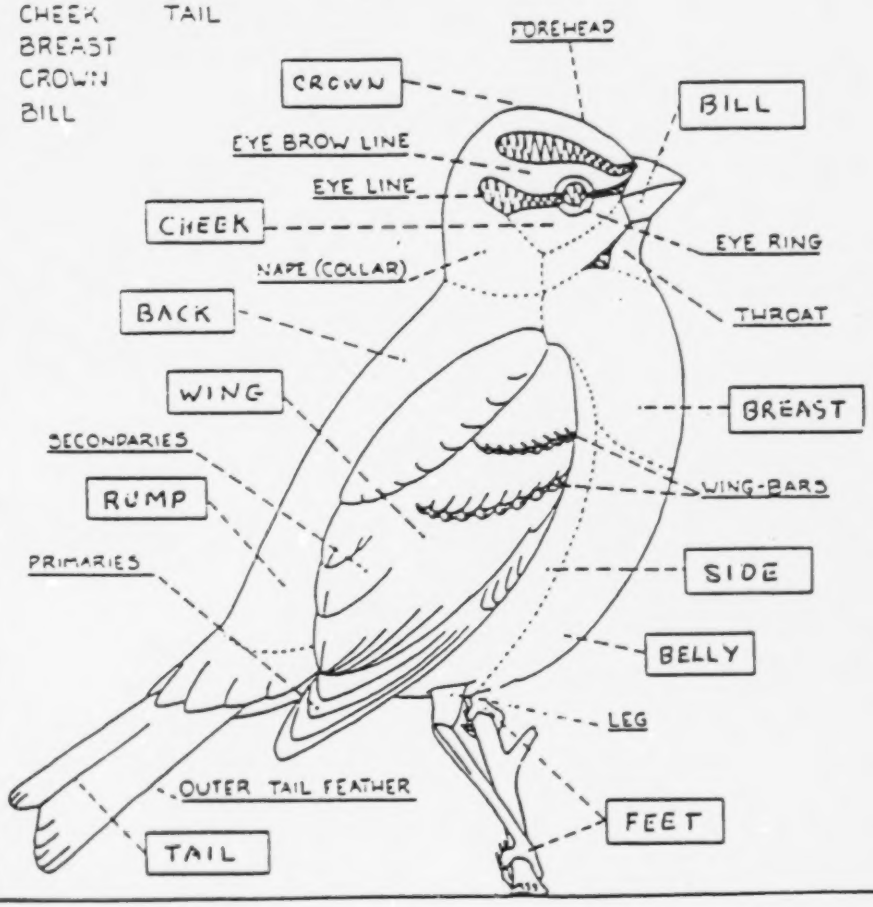


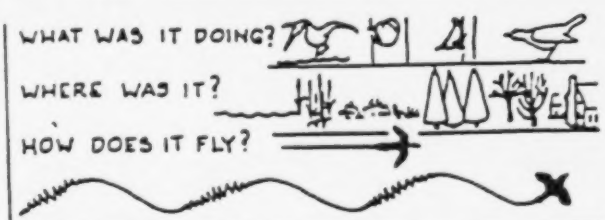
THE PARTS OF A BIRD

FILL IN THE BOXES

AND LEARN THESE PARTS

BACK	SIDE	FEET
RUMP	BELLY	WING
CHEEK	TAIL	
BREAST		
CROWN		
BILL		

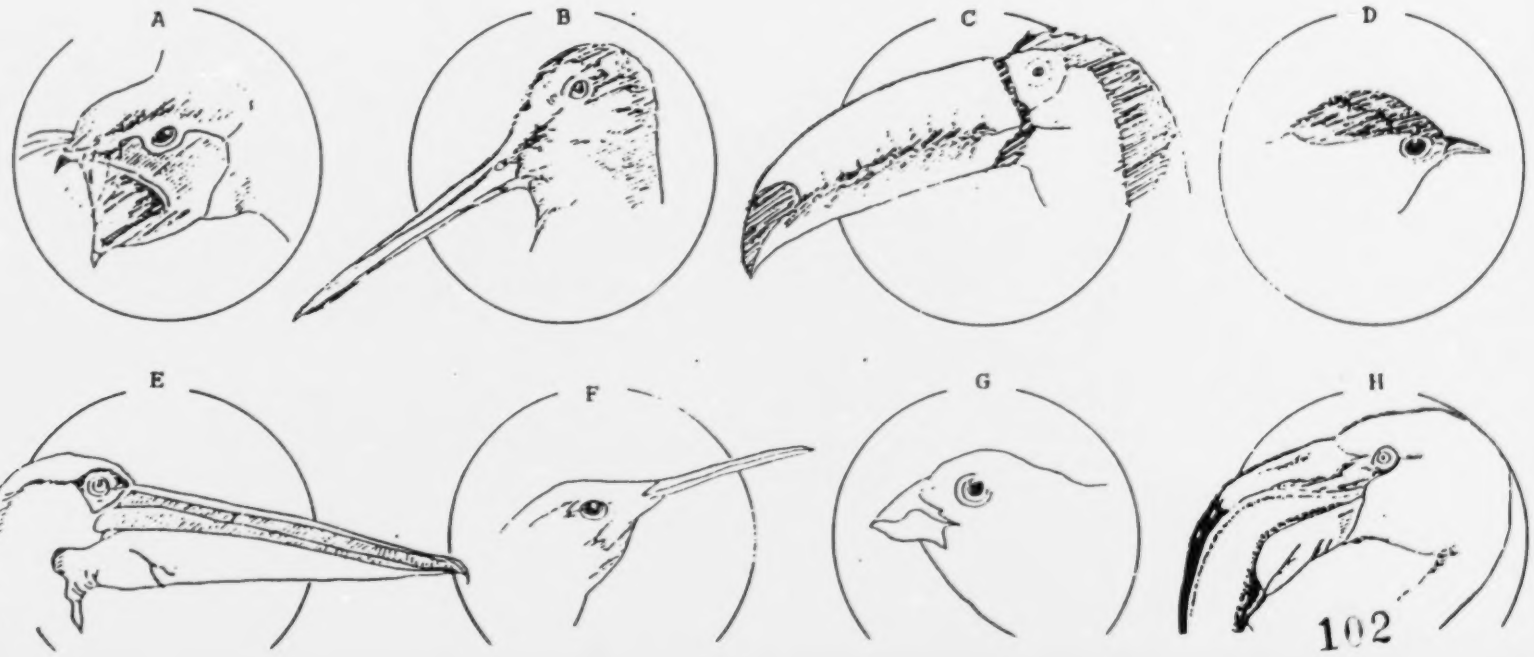




COPYCAT PAGE

FILL THE BILL

1 NECTAR	**2** WORMS IN THE MUD	**3** SEEDS	**4** FISH AND OTHER WATER CREATURES
5 TINY WATER PLANTS AND WATER ANIMALS	**6** FLYING INSECTS	**7** CATERPILLARS AND OTHER INSECTS	**8** FRUIT



RANGER RICK'S NATURESCOPE: BIRDS, BIRDS, BIRDS!

ANSWERS: A. Swift (6), B. Snipe (2), C. Toucan (8), D. Warbler (7), E. Pelican (4), F. Hummingbird (1), G. Grosbeak (3), H. Flamingo (5).

BIRDS

Selected references (some from which materials were adapted):

"Birds," Massachusetts Audubon Society, Lincoln, MA 01773.

Peterson, Roger Tory, How to Know the Birds, Boston: Houghton Mifflin Co., 1957.

"Ranger Rick's Nature Scope - Birds, Birds, Birds," National Wildlife Federation, 1400 16th St., N.W. Washington, DC 20036, 1985.

ENVIRONMENTAL ETHICS UNIT

Many important decisions about the environment will be made in the coming years. Politics, power, religion and money will often determine people's actions. Therefore, these decisions may not be in the best interest of the environment. Environmental awareness must grow so that pressure will be placed on the decision-makers to carefully evaluate their actions. However, this process often starts at the grass roots (the general public). Values and ethics relating to the environment must be discussed. Below are activities relating to this area.

ACTIVITY 1:

Rationale - To take reponsibility for decision-making.

1. With your group discuss the meaning of the word "dilemma." This is a choice between alternatives. In other words, what to do in a situation where there is more than one choice and it may be of equal importance. In this case, the group will be involved with environmental dilemmas.

Give to everyone a copy of two, brief environmental dilemmas (AT THE END OF THIS ACTIVITY). With each dilemma there should be four to five choices of actions or solutions to the problem. Ask for two volunteers. Each volunteer should read one to the group and any new words should be explained in English. It may take more than one reading for each dilemma and its solutions to be fully understood. The volunteer should decide which alternative to choose and why. Then, the group should have an opportunity to offer any differing opinions and their reasons. The discussions should not be any longer than five minutes.

Have the group separate into pairs and make up their own environmental dilemma, using the same format as the two examples just discussed. Ask them to print the final draft so others can read them. Some suggestions for topics can be printed on a piece of paper and hung up so everyone can see them. Here are a few suggestions: use of pesticides, using live Christmas trees instead of artifial trees. picking wildflowers and fruit in protected areas, feeding wildlife near your home, acid rain problems, buying an auto, using computers, world population problems, etc. Some of these may not be appropriate for your country so think of other suggestions. However, the bottom line is that pairs should preferably think of their own ideas for environmental dilemmas. When the members of the group are finished, collect the written dilemmas and randomly hand them out, one to each person. Make sure that individuals in the pair who wrote it, do not get their own. Since you will not have enough for everyone (because the situations were written in pairs), have extra environmental dilemmas with their alternative solutions available for the remaining group members (SEE END OF ACTIVITY).

Each person and leader follows the above procedures. Someone reads the dilemma that s/he receives. The reader picks one of the alternative solutions and explains his/her choice. The leader asks the pair who wrote it (if it is one that the group members wrote), if they chose the same alternative and their reasons. Open the discussion to the group but limit it to no more than five minutes.

The following were DILEMMAS created by members of one group.

Dilemma:

You are the Minister of Energy and also a member of a "Green Party." More energy is necessary for your country. You have the following choices:
-Buy energy from abroad
-Start a campaign to lower the consumption of energy
-Build a new coal power station
-Build a nuclear power station
-Other

Dilemma:

You own a large factory. You believe in pollution control. Your smokestack is emitting more toxic substances than allowed by law. You need a new filter/scrubber system in the chimney. If you spend the money you will need to fire 50 employees, because it will cost so much to reduce the pollution from the smokestack.
-Add the equipment and fire the employees
-Not add the equipment
-Wait a few years to see if the cost of the equipment will be cheaper
-Other

Dilemma:

You use pesticides on your farm. You prefer not to use toxic substances but the government will not subsidize your farm for the five years that it takes for the crops to be considered organic by federal law. It is very expensive to make this switch from pesticide use to an organic farm and financially you may loose your farm.
-Don't use pesticides at all for the five years and "hope" to manage financially
-Use pesticides on only specific plants or at specific times
-Use biological pest controls
-Discuss this problem with experts
-Other

Dilemma:

Your family lives in a village about 30 kilometers from the city where you work. There are bus connections only every other hour. You want to promote public transportation because you do not want more pollution from extra cars.
-Wait for the bus everyday
-Borrow some money and buy a new car with a catalytic converter and only use unleaded gas
-Try to find work closer to the village but the pay is much less
-Carpool (Join neighbors in their cars for a ride to work but you must pay the gas for this privilege)
-Other

Dilemma:

You are hunting for deer. You are allowed by law only two bucks (male deer) for the season. You have already shot your two deer during this season. Your family needs the deer meat for food during the winter months. The two deer that you shot were quite small. It is not enough for the family's needs. It is the last day of the hunting season and you are carrying your gun. You see

a large buck.
 -Continue to walk
 -Shoot the buck
 -Get rid of one of the other deer and keep this big one
 -Give this buck to a friend
 -Other

Dilemma:

There is a family living in a big city. You are one of the parents. You have a problem - whether to buy a live or artificial Christmas tree. You know that an artificial tree is very expensive but useable for several years. A live tree is cheaper. Your family always buys live trees.
 -Buy no tree and go to your mother's for Christmas
 -Go to the mountains and there decorate a tree in the forest
 -Buy an artificial Christmas tree and spray it with forest perfume
 -Buy a live Christmas tree from a tree farm
 -Plant a small fir tree in a pot
 -Other

Dilemma:

You are walking in the woods and you see a young animal. There is no sign of its parents.
 -Leave it where it is
 -Move it to a "safe" place
 -Take it home
 -Other

Dilemma:

You find a wounded wild animal. You bring it home and nurse it to good health. It is against the law to keep this animal.
 -Offer it to a local zoo
 -Keep it as a pet
 -Call the authorities and ask their advice
 -Try and release it back into nature
 -Other

Dilemma:

Your friend picks some endangered wildflowers. You tell your friend that this is against the law. Your friend drops them on the ground. Ten minutes later, after you are quickly walking away in a different direction a state wildlife officer tells both of you that she saw a huge amount of picked, endangered wildflowers in the woods, and it is against the law to pick them. She asks you if you know anything about it.
 -Deny any knowledge of the situation
 -Tell the officer that it was your friend
 -Make up a story that you saw someone else doing it
 -Say nothing, but call the authorities later and tell them who did it - don't leave your name
 -Other

Dilemma:

You have a close friend. Your friend is walking with you and eating some food from a plastic bag. When she finishes eating she drops the bag on the ground. You ask her to pick it up and she refuses. She says that this is a public area and so she doesn't

care about it.
-Ask her again to please pick up her trash even though it is a public area
-Pick up the trash yourself
-Do nothing
-Other

Dilemma:

You are the Director of Parks and Wildlife. A deer herd is growing larger in the forest. It is eating all the young trees. There is a hunting season but there are still too many deer. The foresters keep logging and restoring the area with native oak trees, which the deer like to eat and this just increases the size of the herd.
-Open hunting season for a longer time period
-Stop planting oak trees and plant a tree that deer do not like to eat
-Try to put a fence around young trees
-Bring into the area coyote, who are predators of deer
-Other

Dilemma:

There are endangered species growing in a large area in the nearby countryside. The area is becoming heavily developed. The area is economically poor and needs development. The rare species of several plants need to be immediately saved but there is no money for this activity.
-Get volunteer groups to dig up these species and try to plant them in another area
-Try to get a law passed as soon as possible to protect these plants
-Demonstrate against the development of these areas
-Try to raise funds for the plant's preservation
-Other

ACTIVITY 2:

Rationale - To give participants experience in "putting their money where their environmental values are" by holding an environmental values auction.

People in Central and Eastern European countries have had little experience with a free-market economy. The idea of trying to sell something to someone, being talked into buying something or having to act monetarily on their values, eg.to buy shaving cream in a tube or aerosol spray can, may be a new experience. In this activity participants are asked to choose an environmental problem and "sell" that problem to others in the group who have limited money to spend on trying to solve important environmental problems. The participant will also be confronted with the reality of whether or not s/he actually does support the environmental problems that s/he thinks are most important.

Begin the activity by giving each participant a small piece of paper and asking them to write down what each considers the three most important environmental problems in the world. They are to do this quietly, without discussion and then put their names on the paper and the leader collects the papers. (The leader will NOT refer to these papers or what the participants put on their "little papers" until the end of the activity).

Next put a list of environmental problems up on the wall. Explain each and ask the participants to add others which they think are important. Accept all suggestions. Be careful not to have the same problem twice but in different forms.(SEE BELOW FOR SUGGESTIONS).

SUGGESTIONS:

deforestation
acid rain
ozone
global warming
atomic energy
toxic waste
land fills
packaging
gene pool
overpopulation
fossil fuels
smog
consumerism
water pollution
indifference (people not caring about the environment)

At this point explain the "game": Each participant will select one problem. Then s/he will have time to prepare a five minute "sales pitch" to try to get the other participants to give money to her or him which will be used FOR HELPING TO FIND A SOLUTION to this particular problem. Each participant will not only try to get others to support his or her problem, but will also have money to spend on the problems of the other participants. Each participant will receive 120 "eco"s to be spent on trying to solve the environmental problems of the world. (When discussing the list of environmental problems AVOID ALL ASSOCIATION TO THE LIST OF THE THREE THAT THEY MADE AT THE BEGINNING OF THE ACTIVITY! The ones you collected.) Hold up a sheet of "money" in order for participants to see what you are talking about. The "money" will be called "ecos." Eco is used like the word "dollar." (SEE END OF UNIT). Explain that the idea of the activity is to get as much money as possible to be used to help solve your problem. You will probably have to explain these instructions, and the ones that follow, several times to the group, since some will find these ideas quite new. A good technique is to have one of the participants who understand explain it to the others.

Have participants choose one problem s/he would like to sell to the others. A good way to reduce chaos in the selection process is to use a lottery system. Number small pieces of paper from one to as many people who are participating. Then hold them face down and have each participant pick one. That will be the order in which the participants pick their choice of problem. The number does not indicate the particular problem. It is most important that the people are able to freely pick what they want. Once everyone has a particular problem give them time to prepare their "sales pitch" (their advertisement).

While the group is working on their "talks", the leader will assign to each problem selected on the list the letter A, B or C. They represent the value of that particular environmental problem. A = 60 ecos, B = 50 ecos, C = 40 ecos. The leader can assign these values arbitrarily or randomly.

The leader will need to help participants develop their talks, since this kind of assignment will be new to some of them.

When participants have finished preparing their talks give each a sheet of money and have them tear off each 10 eco bill by folding and creasing the paper first.

Now explain the A, B and C next to each problem. Tell them that each problem is worth so much money (so many ecos).If you wish to support a particular problem you must pay that much money to do so.

Next distribute the "share" (coupons) sheet (SEE END OF UNIT). Explain that each time a person gives ecos in support of a particular problem, s/he receives a "share" of that problem. Each time a person sells a share of his/her problem to someone, a paper share must be filled in and given to that supporter, AND that person's name must be written down on the appropiate list. This is to help people keep track of how many shares they sell and how much money they are making, as well as what shares they have bought.

Give each person a sheet of paper, and fold it in thirds. In the middle section write the name of the person's environmental problem. Then fold this sheet into a triangle to create a name plate. Spread out all the participants around the room. Have each put their name plate on the table in front of them.

Ask once again if there are any questions, because the game is about to begin.

Now, have each participant give their "sales pitch." (It is a good idea to have the "weaker" speakers go first in order to avoid feelings of inadequacy that might result following a "dynamite" presentation.)

When everyone has completed their talks, announce that the game has started, and each of the participants are free to go to any other person, talk to anyone and buy whatever shares they want. Point out that half a share can not be sold. People can only buy a share if they have the required amount of money. At this point some will be timid to get up and "spend" their money, But soon most will be quite active.

When everyone has finished "spending their money," ask everyone to tally up how much money each person made. Find out which were the top three problems in which people wanted to invest their money in order to help solve that problem. Discuss these results with the group, as well as in which problems did people show little interest. Discuss what the group thinks about this.

Ask for comments in general as to what went on in this activity. What were their thoughts and feelings about what they did and what was happening.

Now distribute to each person the little pieces of paper on which they wrote what each thought was the three most important problems in the world. Ask the following questions, but explain to the group NOT TO RESPOND OUT LOUD. Only think to themselves about each question and its answer:

> Look at your list of three problems. Did you support or "sell" those problems that were on your original list?

Did you buy shares of those problems? If so, good. You act on your beliefs. If not, why not?? Is it possible that you really don't care that much about the problems you did not support? You must really think about what you think is really important in the environment!

Look at what shares you bought - what environmental problems you supported. Are these the problems that you really consider most important?

Why did you buy them?

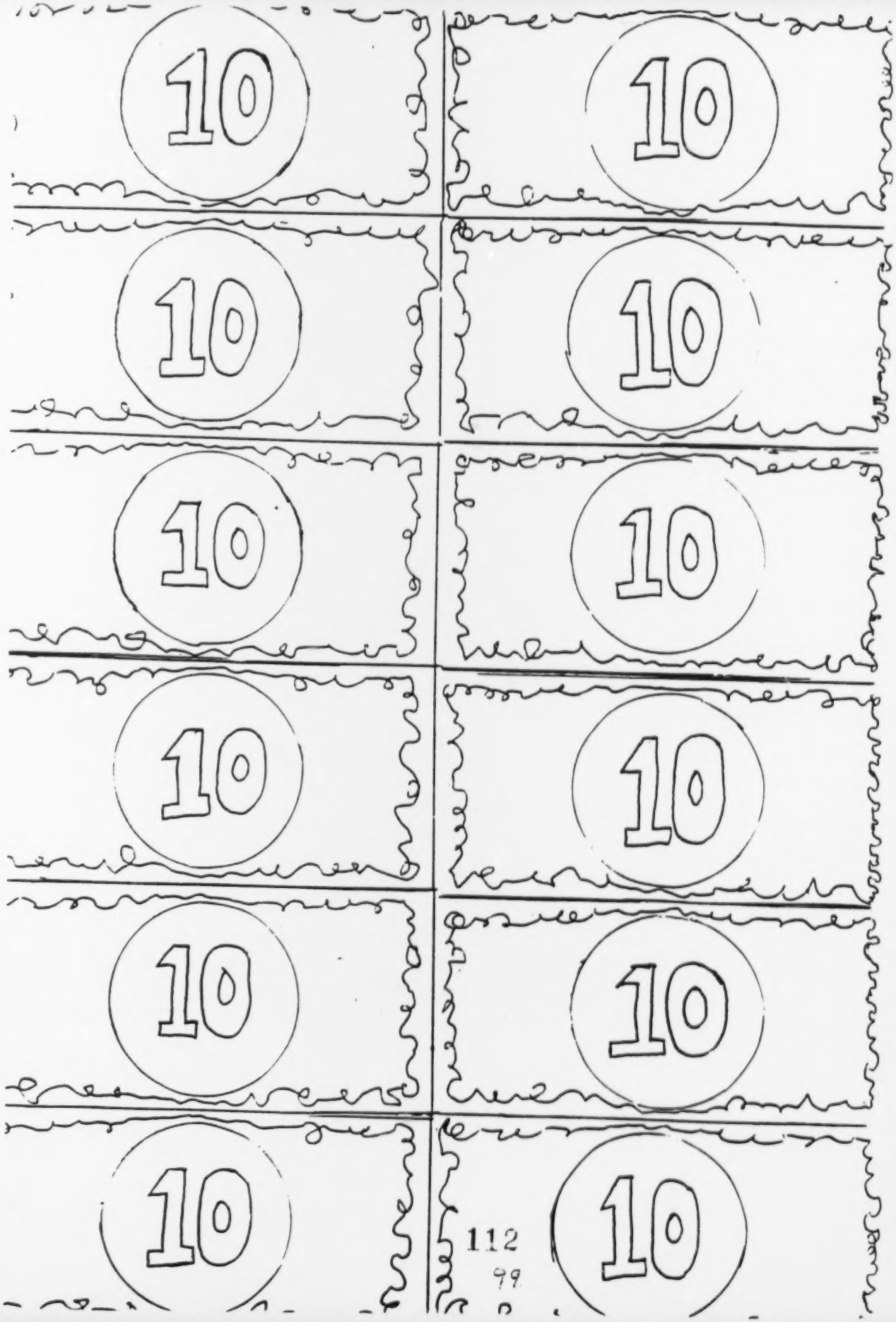
Did someone talk you into something you didn't want? Beware, that is what advertisements are all about!

Did you buy something because you saw someone else buying it or had bought it? If you did, think about why you followed.

Did you end up with money you did not spend? Why was this? Since you only had so much money and you knew the price of each problem, did you plan ahead to see what you could buy with "all" the money you had? Having leftover money at the end is valueless.

Discuss the question, "Were the problems properly valued?" This should lead to an interesting discussion.

Finally, discuss whether money is the only solution to environmental problems? Or is money the solution to environmental problems? If not, what are some alternatives?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1 SHARE of _____ Value ____	1 SHARE of _____ Value ____	SHARE of _____ Value ____
1 SHARE of _____ Value ____	1 SHARE of _____ Value ____	1 SHARE of _____ Value ____
1 SHARE of _____ Value ____	1 SHARE of _____ Value ____	1 SHARE of _____ Value ____

PEOPLE WHO BOUGHT A SHARE OF

100

ENVIRONMENTAL ETHICS

Selected references (Some from which materials have been adapted):

Klippel, Friederike, Keep Talking: Communicative Fluency Activities for Language Teaching, New York: Cambridge University Press, 1984.

"Project Wild: Secondary Activity Guide," Western Regional Environmental Education Council, 1986.

MISCELLANEOUS ENVIRONMENTAL ACTIVITIES UNIT

The environmental activities in this unit are usable in a variety of situations. Each activity is self contained and can be used in any situation considered appropriate by the leader. Some of these activities were developed to meet the needs of leaders presenting environmental issues to groups in four to five day workshops.

Activity 1:

Rationale - to help a new group bond.

A. This activity is best used at the beginning of a workshop that will last over several days. Big sheets of paper are put on a wall. A smaller paper entitled "Name - Symbol" is put next to the big papers. As participants of the workshop enter the room, they put their name on the "Name - Symbol" sheet. Next to their name each draws a symbol to represent themselves (happy face, cat, peace sign, etc.). Then each participant proceeds to fill in the questions (SEE BELOW) on the larger sheets of paper by putting their symbol in the appropriate places. Participants enjoy sharing interests.

On the big papers the following questions are printed (leave sufficient space for answers):

1) Number of foreign languages you know (even if you know only a little)

---
1 2 3 4 5 6

2) Rate your own English level

---
can speak and understand simple sentences — good — fluent

3) Number of years studying English

---
1 2 3 4 5 6 7 8 9 10

4) What is your favorite season:

winter spring summer fall

5) Where do you work:

Government - Business - Academia - Parks - NGO - Other

6) Number of years in the environmental field:

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1     5     10    15    20
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7) What is your favorite outdoor activity?

8) Where is your favorite natural beauty place in the nation?
(The presenter should draw an outline of the country that the workshop is being held in under the question.)

9) What species in nature are you most like? Draw the species with your symbol next to it.

10) What do you consider the most important environmental problem for the country? Please write this and put your symbol next to it.

B. Each participant is given a questionnaire entitled FIND SOMEONE WHO: (SEE END OF UNIT). The idea is to find as many DIFFERENT people as possible to fill in each "square." Each "square" has a letter which relates to a question above. Each "square" has a line to put the name of the person who is answering the question and a line for the country that is the answer to the question. It is also a good idea to write the specific answer on the bottom of the "square."

To get started all participants must stand up, walk around the room asking questions to the other participants. People should try to get only one answer from another participant. After a sufficient amount of time go over the questions by having the participants tell about their different answers.

C. Distribute a copy of MY ENVIRONMENTAL BADGE (SEE END OF UNIT) to each participant. Each person is to fill in the badge by drawing representations for their answers. Stick figures, symbols, slogans or a single word can be used. All questions and answers relate to the environment. After a sufficient amount of time participants pin the badge on their chest, walk around the room and discuss their responses with each other.

Activity 2:

Rationale - to improve environmental vocabulary.

A. Distribue a copy of ECOLOGY GLOSSARY/VOCABULARY ACTIVITY (SEE END OF UNIT) to each participant. The leader or participants read each of the vocabulary words and definitions. Discuss any ambiguities or confusion that may arise about the definitions. Next have the participants fill in the blank statements in the VOCABULARY ACTIVITY using the new vocabulary words. When participants are finished go over the answers.

B. Give each participant an ECOBINGO sheet (SEE END OF UNIT). Have each person randomly put one vocabulary word from ECOLOGY GLOSSARY (SEE ABOVE ACTIVITY) into the top half of each square. When everyone has completed this, the leader will say "Number one" and read a definition. If a person thinks s/he has the corresponding word in her/his "Bingo card" then a "1" is placed in the bottom half of the square with the appropriate word in it. The leader then says "Number two" and reads another definition, and the participants put a "2" under the appropriate word if they have it written on their card. The leader continues in this manner until the game is over. The game is over when a person has filled up a complete row going in any direction (horizontal, vertical or diagonal). When someone has a complete row, s/he yells "bingo". The leader then checks the accuracy of the person's answers. If there is a mistake, the activity continues until there is a winner with a row of correct answers.

Variations to the activity could include the first person to fill all four corners wins or the first to fill the card completely. The advantage of the latter is that maximum use is made of the participant's Bingo card (much time is consumed in preparing the card each time) and more words/ definitions are covered.

C. Distribute a poem sheet (SEE END OF UNIT) to each person. At first participants feel anxious about the idea of writing a poem, but assure them that the end products will be beautiful and contain creative imagery. Read the sheet to the participants.The idea is to think of different metaphors from the environment to describe a likeness to something else in the environment. It is not necessary to have participants create a rhyming poem because of the difficulty, but some will. After everyone has completed one poem, go around the room having each person read his/her poem. BUT the last line is not to be read. Instead let the rest of the group try to guess what the person was describing in the last line. Often the group will be able to guess.

D. Participants are divided into pairs. The two participants in each pair then turn their chairs around so they are sitting back to back. One participant is given picture A and the other participant picture B (SEE END OF UNIT for pictures of animals in a landscape - "A" and "B" are in the lower right corner of each picture). There are 15 differences between the pictures. (SEE ANSWERS BELOW) The participants can not look at each other's picture. They must take turns asking each other what is different in each picture. After a sufficient amount of time the leader reads the answers to the group or has each group in turn give an answer.

Differences Between Pictures
(starting counterclockwise)

A	B
2 trees behind field	3 trees behind field
1 sheep in field	no sheep in field
1 squirrel	2 squirrels
stump next to fox	no stump next to fox
bird house on tree	no bird house on tree
owl on stump	owl on branch of tree
1 baby duck	2 baby ducks
no black cattails	3 black cattails
no mouse	mouse in field
1 hen, 1 rooster	1 hen, no rooster
6 little flowers	3 little flowers
no woodpecker on tree	woodpecker on tree
nest in tree	no nest in tree
barn and silo	barn with no silo
10 birds	7 birds

E. Participants are divided into small groups and given a large piece of paper and a marker. Each group is to write a "green fairy tale" - a fairy tale that relates to the environment in general or to a specific environmental issue. Each person in the group takes turns writing the next sentence. The group can not discuss the general plot of the story. The plot will unfold as each person in turn adds the next sentence - with all its surprising twists and turns. The leader can present the same opening sentence for all the groups to use, such as "Once upon a time there was a large kingdom." When all the groups are finished (approximately 30 minutes), the first story is put on the wall, and the story is read out loud sentence by sentence. Each person in that group reads the sentences that s/he wrote. The leader can make whatever corrections are necessary as the story is read. The other group fairy tales are presented in the same manner. Remind people to write BIG. It must be readable by the other participants.

F. The leader tells an environmental story to the group. (SEE "THE FIR TREE" AT END OF UNIT for an example.) When the story is finished, the story is retold by the group by having each person in turn telling the next few sentences of the story. The recounted story will not be an "exact" retelling of the story.

G. Distribute the worksheet entitled DESPERATE DECISION (SEE END OF UNIT). The leader or participants read the worksheet out loud sentence by sentence. Explain vocabulary and concepts as necessary. When finshed, the participants are put into groups, and each group must decide how to solve the problem. After an appropriate amount of time bring all groups together and discuss the various alternatives decided

by each group and their pros and cons. This activity was taken from the book Keep Talking by Friederike Klippel, Cambridge University Press, 1984.

H. Distribute a copy of Chief Seattle (SEE END OF UNIT) to each participant. Have each participant take turns reading the message line by line. Explain vocabulary as necessary. When finished discuss the concepts of the message with the group.

I. Ask each participant to put him or herself "inside" an animal in nature. Have the participants try to imagine how this animal sees the world around it. Then, from the point of view of the animal tell about "your" life. Some examples could be: ant in grass, spider on web, fly caught in web, bird in tree, fish in polluted river, fox in forest being clear cut, etc.

J. After discussing a particular environmental problem, present the group with five or six important terms/words relating to the problem. Divide the participants into groups of four or five. Each group must create/write a song using each of the important terms/words in the song. Groups then sing their song to the others. Allow about 20 minutes to create songs. Participants have an easier time when they pick a melody they all know, such as a folk song, popular jingle from a commercial, Christmas song or nursery rhyme.

Activity 3:

Rationale - to get feedback from participants on which activities are successful and which ones need changing.

A. At the end of a workshop distribute an evaluation form. This will aid the leader in improving future workshops or individual activities. The following are some suggestions for questions on the evaluation:

* What did you like about the morning/afternoon session(s)?
* What didn't you like about the morning/afternoon session(s)?
* What would you change?
* What was your favorite activity(s)?
* Circle where you would put yourself on the following scale:
  I thought this environmental workshop was:

---

poor (I learned nothing)	okay (I learned something)	very good (I learned a lot)

* General comments:
* Name (optional)

FIND SOMEONE WHO:

A can name an endangered species in another country

B enjoys eating food from another country

C has helped spoil the environment of another country by what they use/ do at home

D has recently seen a bird that has migrated from another country

E is wearing something that was made in another country

F has visited a country where tourism is causing environmental problems

G knows about an environmental problem elsewhere that affects life here

H owns an electrical appliance made in another country

I has a plant or flower at home that originates in another country

J has learnt about an environmental issue in another country from TV recently

K has a car that was made in another country

L knows about an environmental problem here that affects another country

M has helped protect the environment of another country

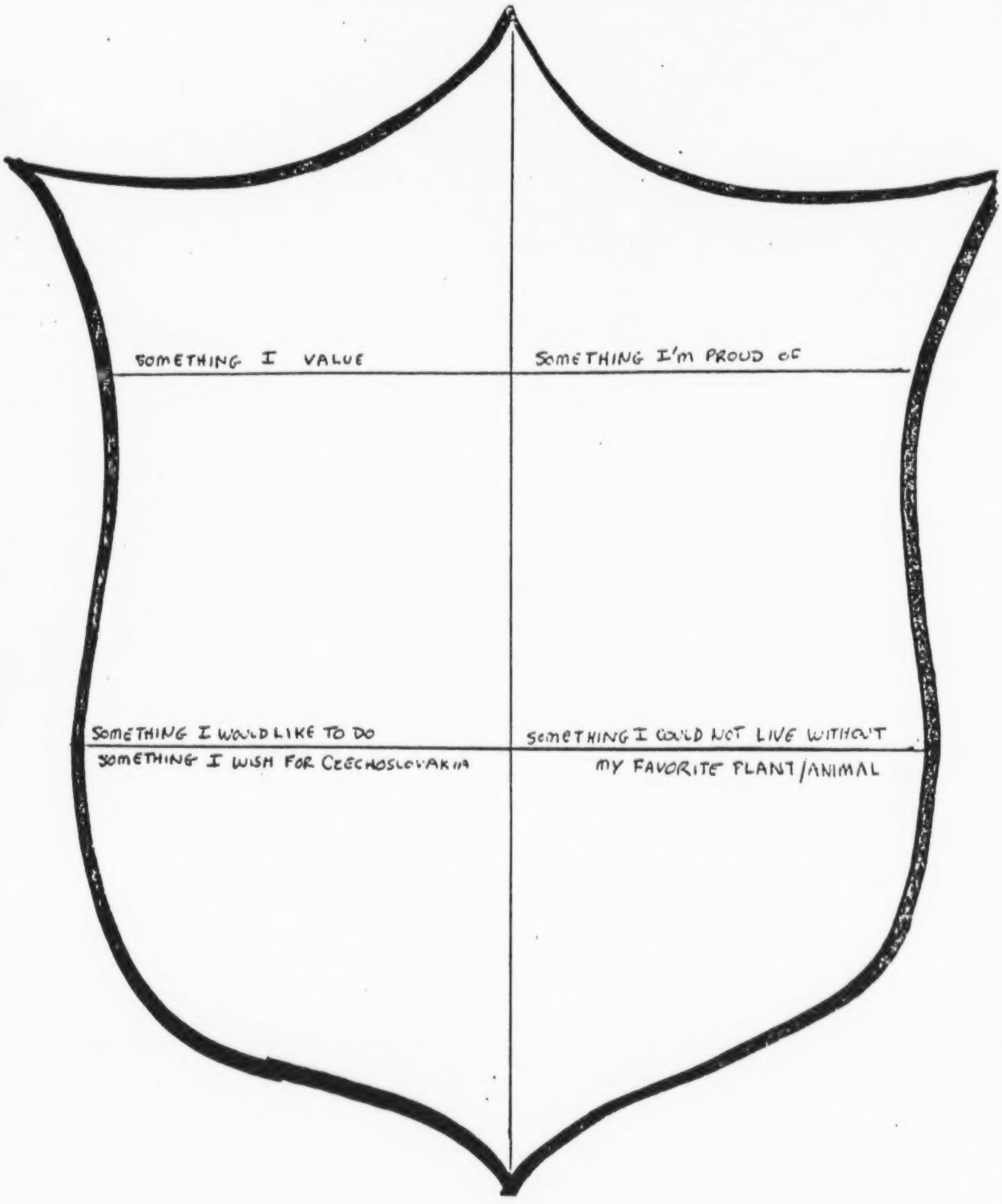
N has seen an animal whose natural habitat is in another country

O knows the name of an environmental pressure group working in another country

P has read about an environmental success story in another country

A _____ name _____ country	B _____ name _____ country	C _____ name _____ country	D _____ name _____ country
E _____ name _____ country	F _____ name _____ country	G _____ name _____ country	H _____ name _____ country
I _____ name _____ country	J _____ name _____ country	K _____ name _____ country	L _____ name _____ country
M _____ name _____ country	N _____ name _____ country	O _____ name _____ country	P _____ name _____ country

MY ENVIRONMENT BADGE


SOMETHING I VALUE
SOMETHING I'm PROUD OF
SOMETHING I WOULD LIKE TO DO
SOMETHING I COULD NOT LIVE WITHOUT
SOMETHING I WISH FOR CZECHOSLOVAKIA
MY FAVORITE PLANT/ANIMAL

ECOLOGY GLOSSARY

Keep this glossary page in a notebook or folder. Add new words to your vocabulary as you study ecology.

ATMOSPHERE — The mass that surrounds the Earth.

BIOME — A large land community in which conditions of life are more or less uniform.

DESERT BIOME — A land community having less than ten inches of rainfall each year, hot days, cool nights, and scattered vegetation.

TROPICAL BIOME — A land community having much rainfall and warm temperatures; usually located near the equator.

POLAR BIOME — A land community having permanently frozen subsoil and little vegetation; located near the polar regions.

TEMPERATE BIOME — A land community having definite seasons and wet and dry periods. The central and eastern United States are part of this biome.

CARNIVORE — A meat-eating animal.

CHLOROPHYLL — The green coloring matter of green plants.

CONSERVATION — The wise use of natural resources.

CONSUMER — Any organism that uses, rather than produces food.

DECOMPOSER — An organism that breaks down the substance of dead organisms. Mushrooms and bacteria are decomposers.

ECOLOGY — The study of living things in their environment.

ECOSYSTEM — The interlocking life in an area.

ENVIRONMENT — All the influences, including the place, which affect a living thing.

EVAPORATE — To change into moisture

FOOD CHAIN — A transfer of food energy from one organism to another.
Producer/Consumer/Decomposer

FOOD WEB — A group of interlinked food chains.

HABITAT — The physical place where an organism lives.

HERBIVORE — A plant-eating animal or insect.

OMNIVORE — An animal which eats both plants and other animals.

PHOTOSYNTHESIS — The foodmaking process of green plants.

PRECIPITATION — Water droplets or ice particles condensed from water vapor, massive enough to fall to Earth's surface.

PRODUCER — A living thing that makes food. Green plants are producers.

SCAVENGER — An animal or insect that feeds on the remains of dead animals. Vultures and ants are scavengers.

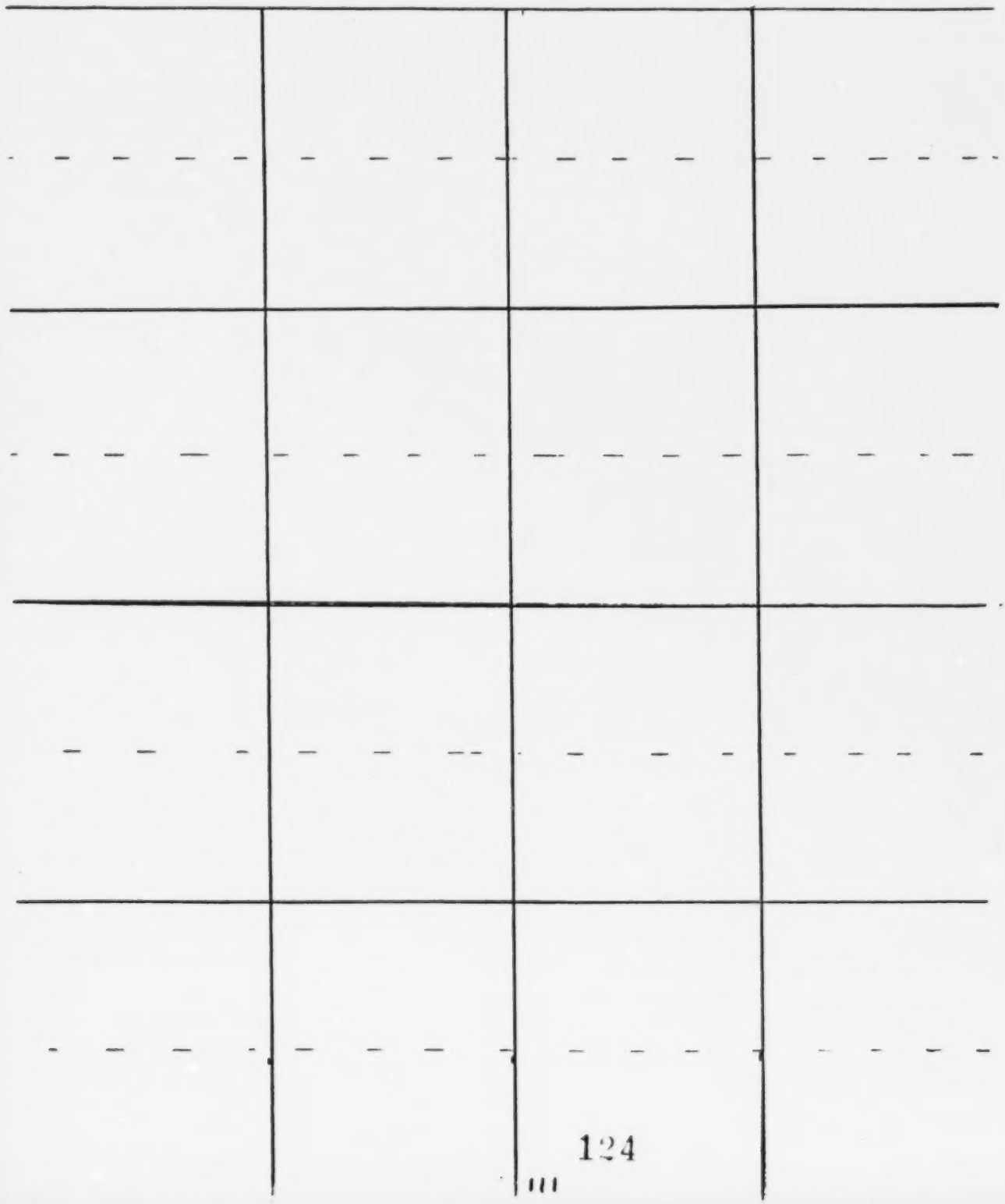
TRANSPIRATION — Giving off air or vapor through pores of skin or leaves.

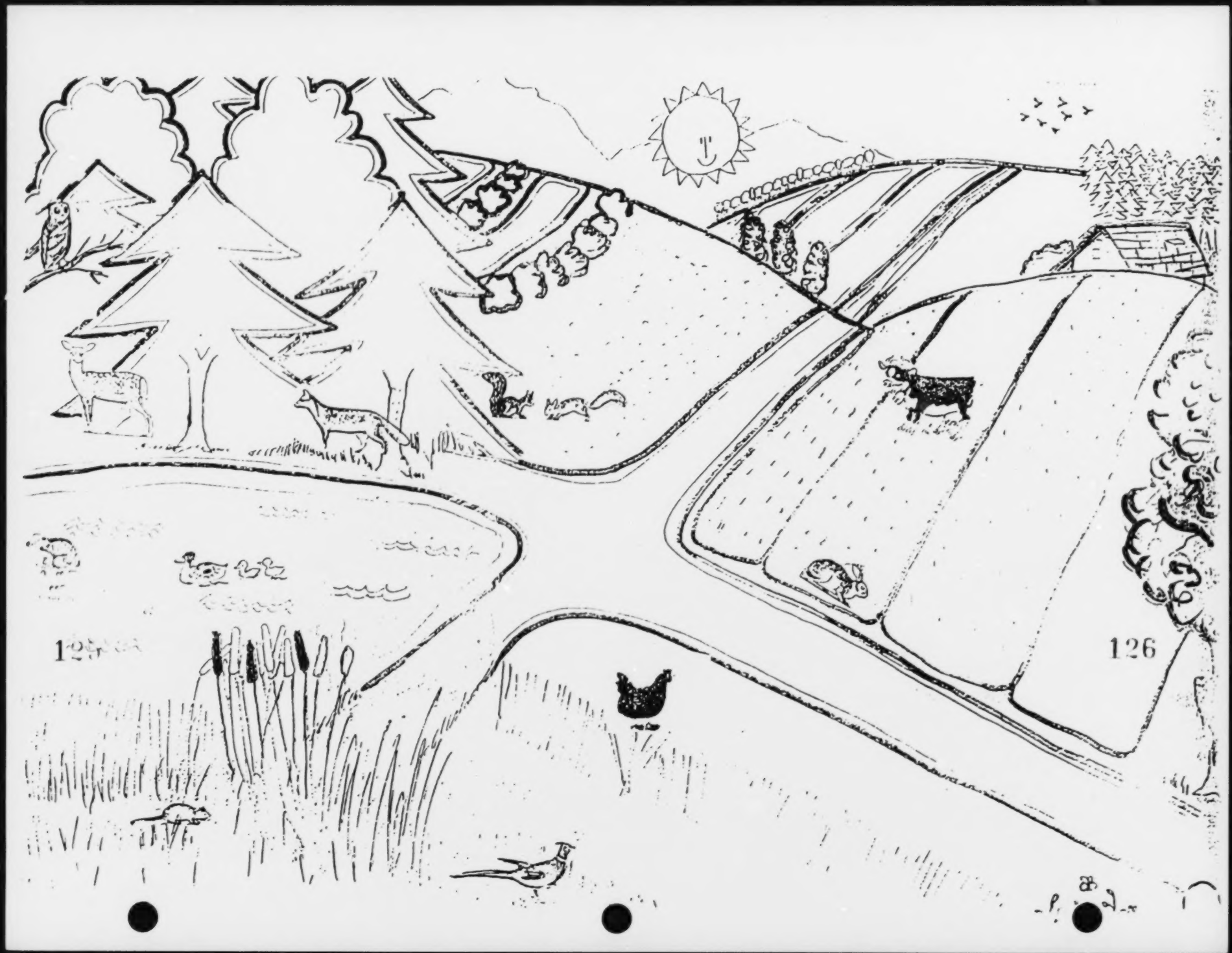
VOCABULARY ACTIVITY

Use the words from your ecology glossary to complete the following sentences.

1. _____ is the study of living things in relationship to their environment.
2. An animal which eats only other animals is a _____ .
3. An _____ is an animal that eats both plants and other animals.
4. A plant-eating animal or insect is a _____ .
5. A plant makes food for itself by means of _____ .
6. Food chains in a community make up a _____ _____ .
7. Plants and animals of the _____ _____ survive with very little water.
8. A mushroom is a _____ in a food chain.
9. A _____ performs a clean-up task by removing the remains of dead animals.
10. Desert, temperate, jungle, and polar are four types of _____ .
11. A _____ _____ consists of a producer, a consumer, and a decomposer.
12. An _____ is a plant and animal community together with its environment.
13. The physical place where an organism lives is its _____ .
14. Our surroundings are called our _____ .
15. Man is a _____ in a food chain.
16. The _____ _____ has hot summers and cold winters.
17. The _____ _____ is wet, warm, and near the equator.
18. The snowshoe rabbit changes to a winter-white color to blend in with the snow in the _____ _____ .
19. _____ makes plants green.
20. We must practice _____ to make our natural resources last.

ECOBINGO

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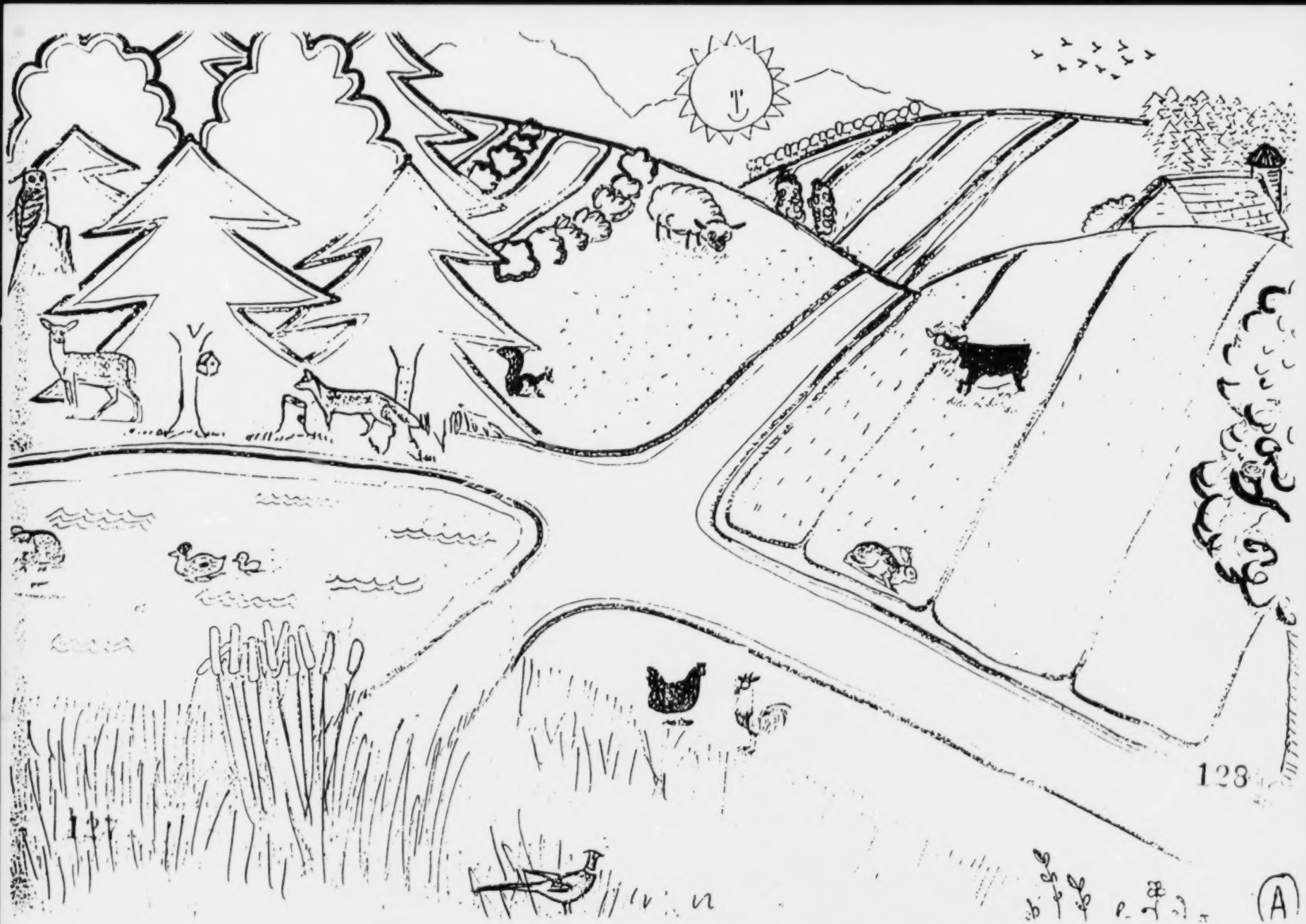
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THE FIR TREE by GRIMM

Far away in the forest, there once grew a pretty little fir tree. The sun shone on him, the wind played around him. Near him grew many other fir trees, some older, some younger; but the little fir tree was not happy. He was alway wanting to be tall like the others. He did not think of the warm sun and the fresh air. He did not pay attention to the happy, noisy local children who came to the forest to look for strawberries and raspberries. Sometimes, after filling their baskets they would sit down near the little fir tree and say, "What a pretty little tree this is!" Then, the fir tree would feel more unhappy.

"Oh, I wish that I was as tall as the other trees," said the little fir tree, "then, I would look out over the world." The birds would build their nests in my branches, and when the wind blew I should bend my head, like the other trees do!" He did not enjoy the sunshine, or the songs of the birds, or the pink clouds that passed over him every morning and evening.

In the winter, when the ground was covered with white shiny snow, a hare would sometimes come running along and jump over the little tree's head. This made him so unhappy. Two winters passed and by the third winter, the tree was so tall that the hare had to run around it. "Oh, if I could only grow and grow and become tall and old!" thought the tree. "That is the only thing in the world I want."

The wood-cutters came in the autumn and cut down some of the largest trees. This happened every year. Our young fir tree was getting taller so he was afraid when the big trees fell down with a big noise to the ground. Their branches were cut off. They looked so naked and thin that they could hardly be recognized. They were put into wagons and taken far away from the forest.

"Where could they be going? What would happen to them?" Tne fir tree wished that he knew. In the spring, when the swallows and storks returned, he asked them if they knew where the cut trees went. The swallows knew nothing but the stork thought for a moment and said that he had seen them. "As I was flying from Egypt I saw many ships and they had fine masts that smelled like fir trees. I know that they were the same trees. They were big and beautiful," said the stork.

"Oh, I wish that I was tall enough to sail upon the sea!" said the fir tree. "Goodbye." said the stork and flew away. The sun said, "Be happy to be young." And the wind kissed the tree. But the fir tree did not understand them.

When Christmas came near, many of the young trees were cut down, some of them were not as tall as the young fir tree who was always hoping to be taken away. These trees were also put into a wagon and taken away. "Where are they going?" asked the fir tree. "We know!" sang the sparrows. "We looked through some of the windows in the town's houses and we saw them planted in a warm room and decorated with pretty things: apples, candies, playthings and hundreds of bright candles!" "Will this happen to me?" asked the fir tree. "This would be better than sailing! Oh, I wish that it was Christmas. I am tall and have many branches like those other trees that were carried away last year."

The air and the sun said, "Enjoy being free and young."

He was not happy. He grew taller every day. In winter and in summer he stood there in his dark green leaves. The people saw him and said, "What a beautiful tree!" The next Christmas he was the first tree to be cut down. The axe hurt him and it hurt when he hit the ground. He felt so badly saying goodbye to his forest friends that he would never see again. He did not like the trip in the wagon.

Two men finally came and carried the fir tree into a large, beautiful livingroom. Pictures hung on the wall and Chinese vases were on the fireplace. There were rocking-chairs, silk sofas, tables covered with picture-books and toys. The fir tree was put in a large box filled with sand. Some young ladies began to decorate him. On some branches they hung colored paper, candies, apples, nuts and hundreds of little candles. Dolls were hung among the leaves and on top of the tree they put a large gold star. He looked very beautiful!

In the evening they lit the candles. How beautiful! The tree wished that his forest friends could see him. He missed them all very much. Suddenly, the doors opened and a group of children came running into the room. They shouted with happpiness and danced around the tree. They quickly opened their gifts.

The candles burnt out. The decorations were taken down. The children played with their new toys. No one thought about the tree any more.

In the morning the men came into the room and took the tree up the stairs into the attic and put him in a dark corner. There was no light. "What does this mean? What am I doing here?" thought the tree. He had plenty of time to think because day after day passed, night after night passed, and no one came into the room. No one could see the tree and no one thought about him. "It is winter now and so the ground is hard. In the spring they will plant me outside," he thought.

Some mice came and played around him. "It is so cold here. Don't you you think so, old tree?" asked a mouse. "I am not old, I am young," said the fir tree. The tree told the mice about the forest. "Maybe I can go back there. I loved the forest but I did not know how happy I was there!" said the tree.

The next day some men came and carried him out to the garden. The tree thought that they would soon plant him but they threw him instead onto a pile of garbage. The air and sun felt so good to the tree. He tried to spread his branches but they were all dried and brown. The children were playing near him and said, "Look at that ugly tree." He thought about the happy forest life. "It's too late! I wish that I had been able to understand how lucky I was to be in the forest!"

A man came and cut him into small pieces and burnt him. The tree made sad noises as he burnt.

The tree is gone and the story is finished. All stories must come to an end.

Poem: as ..... as .....
as ..... as .....
as ..... as .....
is a .....

Pick an image from the environment (this will be the 4th line) then think of three comparisons to explain the image and fill in the first three lines. See examples below.

As soft as a rabbit's fur
As soft as a kitten's purr
As soft as a breeze beginning to stir
is a pussy willow.

As quick as lightning
As sharp as a pine needle
As high as a circling hawk
is the sparrow's clear note.

As _____ As _____
As _____ As _____
As _____ As _____
is a _____

As _____ As _____
As _____ As _____
As _____ As _____
is a _____

Desperate Decision

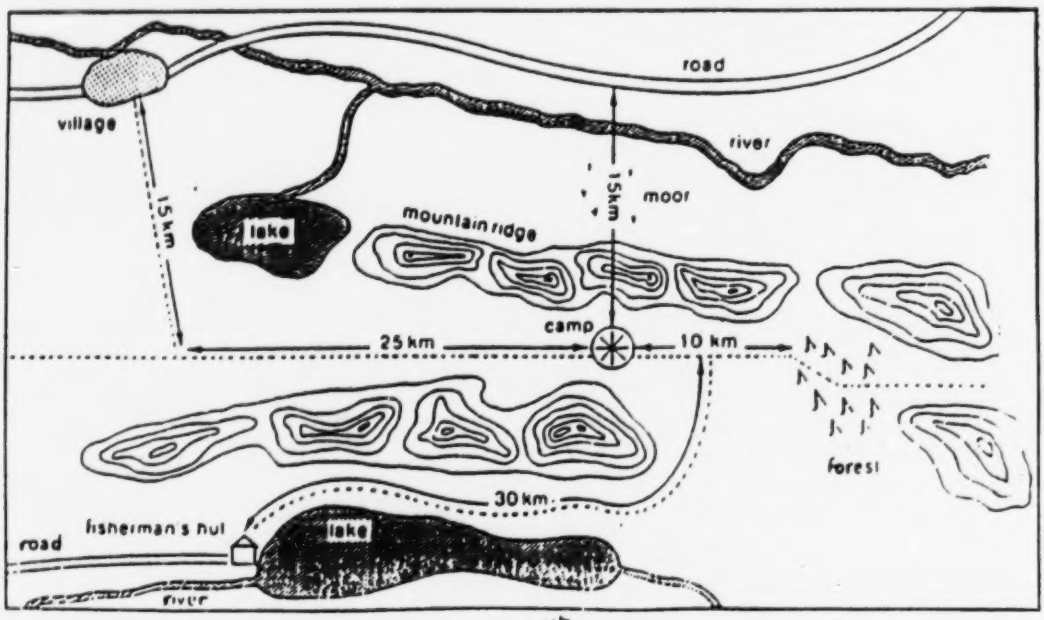
You are Susan Munden, a 35 year-old teacher on a hiking trip in the Scottish Highlands with a group of seven pupils, three boys and four girls aged between 13 and 16. You are carrying your own food and tents. You have planned to be out of contact with other people for a whole week and are expected on Sunday at a small village on the Scottish west coast where you will be picked up by a bus.

Today is Thursday. It has been raining steadily since Tuesday night and everyone is wet and cold. You know that you have not come as far as you should have done by this time, and you start feeling anxious about getting to the meeting point on Sunday. During the morning a dense fog starts coming down , and within half an hour the mountains and the path are covered in thick fog. You have to walk by compass now, which slows the group down even further.

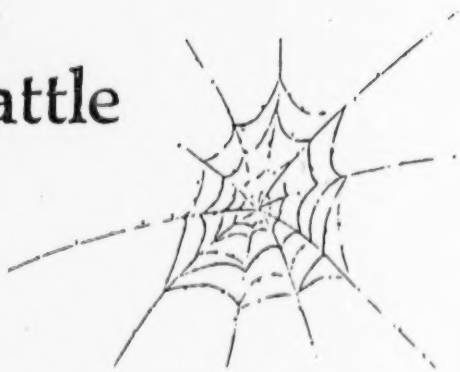
At lunchtime two boys and two girls start complaining about stomach pains, diarrhea and feeling sick. You suspect that some of the water you took from mountain streams may have been contaminated. In the afternoon they feel worse and can only walk very slowly. While climbing down a steep hillside the youngest girl, Rosie, stumbles and falls. She cannot get up. Her leg is broken. You set up camp and discuss with your group what is to be done.

You are in a valley between two mountain ridges. The nearest road is about 15 kilometre away as the crow flies, but there is no path across the mountains and the moor is beyond them. There is no bridge across the river and with all the rain of the last few days it may be too deep to wade across.

About 5 kilometres back the way you have come, a relatively easy path turns off which takes you to a lake and a fisherman's hut about 30 kilometres away. However, you do not know whether anybody lives in the hut or whether has a phone. The next village is about 4 kilometres away. About 10 kilometres back the way you have come there is a small forest where you could find some firewood. You have enough food till Sunday and there are mountains streams nearby. You also have camping gas cookers and enough gas for three hot drinks and two warm meals a day, but there is no firewood. The only people who can read a map and use a compass, apart from you are one of the sick boys and Fiona, the oldest girl (she feeling all right). Rosie is in a lot of pain and needs a doctor soon.



Chief Seattle



You must teach your children that the ground beneath their feet is the ashes of our grandfathers. So that they will respect the land, tell your children that the earth is rich with the lives of our kin. Teach your children what we have taught our children — that the earth is our mother. Whatever befalls the earth, befalls the sons of the earth. If men spit upon the ground, they spit upon themselves.

This we know. The earth does not belong to man; man belongs to the earth. This we know. All things are connected like the blood which unites one family. All things are connected.

Whatever befalls the earth befalls the sons of the earth. Man did not weave the web of life; he is merely a strand in it. Whatever he does to the web, he does to himself . . .